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JULY 1961 • VOLUME 36 • NUMBER 7

745 **The Financial Situation of the American Medical Student**
J. Frank Whiting, Lee Powers, and Ward Darley

776 **Quality of Patient Care—Measurable or Immeasurable**
Robert S. Myers

785 **Art plus Science in Patient Care**
Hugh H. Hussey

791 **The Teaching Hospital's Dependence on the Community**
George G. Reader

795 **Community Relations of University Teaching Hospitals: The Organization of Medical Practice**
George Baehr

799 **The Effects of Teaching and Research on the Teaching Hospital's Economy as Viewed by Hospital Administration**
George Bugbee

805 **Teaching and Research Costs in the Teaching Hospital's Economy—A Consumer View**
Jerome Pollack

813 **Studies on the Reliability and Validity of Objective Examinations**
Henry B. Murphree

819 **The American Medical Student at the "Grass Roots" of Depressed Cultures: A Contribution to International Understanding**
Ida Lou Collick

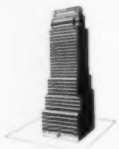
823 **Foreign Doctors in the U. S. A.** (Reprint)

826 **Medical Education Forum; Abstracts from World of Medical Education; New Books**

xviii **Medical Education News**

NEW! | Cherniack and Cherniack—RESPIRATION IN HEALTH AND DISEASE

See Saunders advertisement just inside ☞



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THE NEUROANATOMIC BASIS FOR CLINICAL NEUROLOGY
The Second Edition

By Talmage L. Peele, M.D., Duke University Medical Center, Approx. 600 pp., 7¼ x 9⅞, illus., In press

The Second Edition of Dr. Peele's highly successful work incorporates much new information which explains the mysteries of the nervous system, not only at a lobal level but also at a cellular level. Of particular interest to the student are the results of microelectrode studies, temporal lobe removal, and electron microscopic study. A new chapter arranging brain stem sections into natural sequence has been added.

Shearer's MANUAL OF HUMAN DISSECTION
The Fourth Edition

Edited by Charles E. Tobin, B.S., Ph.D., 258 pages, 7¼ x 9⅞, 97 illus., $7.50

The fourth edition of this popular book is intended to supply the student with concise, specific directions for dissection procedures. The new illustrations that have been added supplement the chapters on dissection of the brain, eyeball, middle ear, oral cavity and fascial spaces of the head and neck. The new nomenclature from the Nomina Anatomica (Paris 1955) has been adopted for both text and illustrations.

PRINCIPLES OF SURGICAL PRACTICE

By Emanuel Marcus, M.D., Ph.D., F.A.C.S., and Leo Zimmerman, M.D., F.A.C.S., 430 pp., 76 illus. (18 in color), 7¼ x 9⅞, $12.50

In this new textbook, the authors stress the basic surgical principles upon which the diagnosis and treatment of disease in the field of surgery rests. Each chapter is introduced by an outline which permits the student to see at a glance the relative importance of any particular statement of exposition to the subject as a whole.

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By E. Lawrence House, Ph.D., and Ben Pansky, Ph.D., 494 pp., 7¼ x 9⅞, illus., $12.50

Prepared with the needs of the medical student continually in mind, this work presents basic neuroanatomy in an interesting style. Using a functional, yet systematic approach, the authors integrate clinical considerations into practically every chapter, including testing and symptoms of neurologic disorders. Every chapter includes a summary at the end which correlates the material in that chapter and aids the students review of it.

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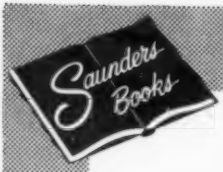

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By REUBEN M. CHERNIACK, M.D., Assistant Professor of Medicine; and LOUIS CHERNIACK, M.D., Assistant Professor of Medicine. Both at the University of Manitoba, Winnipeg, Canada. About 448 pages, 5⅛" x 9¼", illustrated. About $11.50. *New—Ready August!*

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The Journal of Medical Education serves as an international medium for the exchange of ideas in medical education, as well as a means of communicating the policies, programs, and problems of the Association. The Editorial Board welcomes the submission of manuscripts concerned with the broad field of medical education; this includes preparation for medical education; the medical school experience; intern and resident education; graduate and postgraduate medical education. The Editorial Board recognizes that medical education includes the activities of faculty, students, administrators, and those of the practicing profession who also teach and learn. Thus, it invites communications from any of these sources.

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Galley proofs will be mailed to authors for correction before publication and should be returned within 48 hours after receipt.

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Medical Education Forum includes editorials, letters, comments, criticisms, and excerpts from important addresses.

News from the Medical Schools: Material for this section should be transmitted to the News Editor, Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

Items of Current Interest: Audio-visual news and notices from national and federal agencies appear in this section.

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72nd Annual Meeting, Nov. 13-15, 1961

Queen Elizabeth Hotel, Montreal, Canada

1961

AUGUST

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION, Sheraton-Cleveland Hotel, Cleveland, Aug. 27-Sept. 1. Dorothea C. Augustin, 30 N. Michigan Ave., Chicago 2, Executive Secretary.

NATIONAL MEDICAL ASSOCIATION, INC., Commodore Hotel, New York City, Aug. 7-10. Dr. John Givens, 1108 Church St., Norfolk, Va., Executive Secretary.

SEPTEMBER

AMERICAN ASSOCIATION OF MEDICAL CLINICS, Barbizon Plaza Hotel, New York, Sept. 27-29. Dr. Joseph B. Davis, Davis Clinic, 131 N. Washington St., Marion, Ind., Secretary-Treasurer.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Drake Hotel, Chicago, Sept. 28-30. Dr. William T. Fitts Jr., 3400 Spruce St., Philadelphia 4, Secretary.

AMERICAN HOSPITAL ASSOCIATION, Atlantic City, Sept. 25-28. Mr. Maurice J. Norby, 840 North Lake Shore Dr., Chicago 11, Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Seattle, Sept. 30-Oct. 3. For information write: Dr. A. H. Dearing, Prudential Plaza, Suite 2115, Chicago 1.

OCTOBER

ACADEMY OF PSYCHOSOMATIC MEDICINE, Emerson Hotel, Baltimore, Md., Oct. 12-14. Dr. George Sutherland, 3700 N. Charles St., Baltimore, Program Chairman.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Palmer House, Chicago, Oct. 8-13. Dr William L. Benedict, 15 Second Street S.W., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 2-5. Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Ill., Executive Director.

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Benjamin Franklin Hotel, Philadelphia, Oct. 9-12. Miss Doris Gleason, 840 N. Lake Shore Dr., Chicago 11, Executive Director.

AMERICAN COLLEGE OF GASTROENTEROLOGY, Hotel Cleveland, Cleveland, Oct. 22-25. Mr. Daniel Weiss, 33 West 60th St., New York 23, Executive Director.

AMERICAN COLLEGE OF SURGEONS, Conrad Hilton Hotel, Chicago, Oct. 2-6. Dr. William E. Adams, 40 E. Erie St., Chicago 11, Secretary.

AMERICAN MEDICAL WRITERS' ASSOCIATION, New York City, Oct. 6-7. Leslie L. Lewis, LL.B., Ravenswood Hospital, 1931 W. Wilson Ave., Chicago 40, Asst. Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, INC., Statler Hilton, Los Angeles, Oct. 22-27. Mr. John W. Andes, 515 Busse Highway, Park Ridge, Ill., Executive Secretary.

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INTERSTATE POSTGRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, Cleveland Auditorium, Cleveland, Nov. 13-16. Mr. Roy T. Ragatz, Box 1109, Madison 1, Wis., Executive Director.

DECEMBER

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 2-7. Dr. Robert R. Kierland, Mayo Clinic, Rochester, Minn., Secretary-Treasurer.

JANUARY

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Palmer House, Chicago, Jan. 27-Feb. 1. Mr. John K. Hart, 29 East Madison St., Room 910, Chicago 2, Executive Secretary.

AMERICAN COLLEGE OF SURGEONS, SECTIONAL MEETING FOR SURGEONS AND GRADUATE NURSES, Statler-Hilton and Biltmore Hotels, Los Angeles, Jan. 29-Feb. 1. Dr. William E. Adams, 40 E. Erie St., Chicago 11, Secretary.

FEBRUARY

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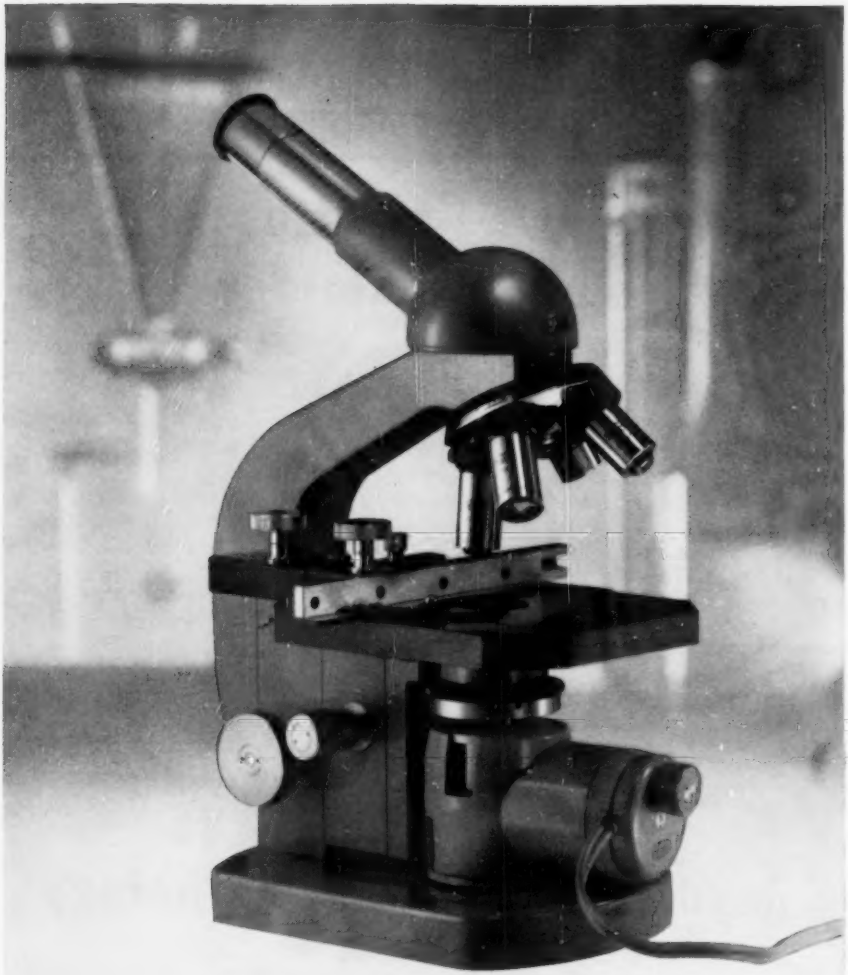

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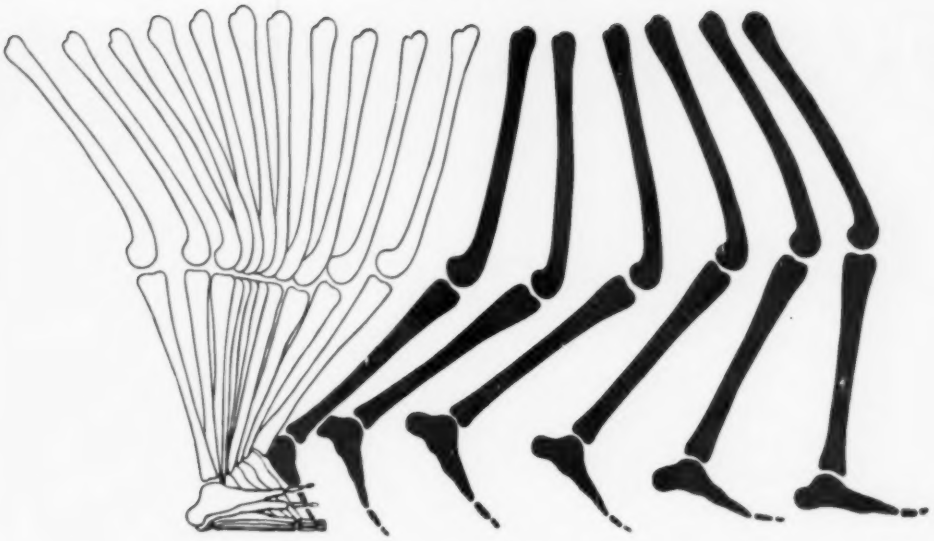

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The Journal of MEDICAL EDUCATION

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Table of Contents

vi Calendar of Meetings

745 The Financial Situation of the American Medical Student—J. Frank Whiting, Lee Powers, and Ward Darley

776 Quality of Patient Care—Measurable or Immeasurable—Robert S. Myers

785 Art plus Science in Patient Care—Hugh H. Hussey

791 The Teaching Hospital's Dependence on the Community—George G. Reader

795 Community Relations of University Teaching Hospitals: The Organization of Medical Practice—George Baehr

799 The Effects of Teaching and Research on the Teaching Hospital's Economy as Viewed by Hospital Administration—George Bugbee

805 Teaching and Research Costs in the Teaching Hospital's Economy—A Consumer View—Jerome Pollack

813 Studies on the Reliability and Validity of Objective Examinations—Henry B. Murphree

819 The American Medical Student at the "Grass Roots" of Depressed Cultures: A Contribution to International Understanding—Ida Lou Collick

823 Foreign Doctors in the U. S. A.—(Reprint)

826 Medical Education Forum:

826 Editorial

827 Datagrams

829 Address

834 Letters to the Editor

836 Abstracts from the World of Medical Education

841 New Books

xviii Medical Education News

xviii From the Medical Schools

xxviii From the National Institutes of Health

xxxii Items of Current Interest

xxxiv Personnel Exchange

xxxvi Index to Advertisers

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The Journal of **MEDICAL EDUCATION**

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The Financial Situation of the American Medical Student*

J. FRANK WHITING, Ph.D.,† LEE POWERS, M.D.,‡ AND WARD DARLEY, M.D.§

Association of American Medical Colleges, Evanston, Illinois

Some 18 months ago, the Association of American Medical Colleges assigned itself the task of making a definitive survey of the financial position of the American medical student. (See Counts and Stalnaker [1954] for an earlier report on medical student finances [1]). An over-view of the results of the work to date can now be presented. This over-view will be presented in terms of three central considerations in the financial situation of the American medical student.

1. The cost of attending medical school
2. The sources of funds available to students to defray medical school costs with particular reference to scholarship, loan assistance, and student employment
3. The medical students' perceptions of their financial problems

Since a variety of different kinds of data will be considered, the discussion of the above considerations has been organized around two central themes. These themes can perhaps be best stated by asking two basic questions:

1. How does the financial situation of the American medical student compare with that of the American arts and science graduate student?
2. What is the impact of marriage and family responsibility on the medical student's financial situation?

A. DESCRIPTION OF THE RESEARCH POPULATION

Before proceeding to the main part of the discussion, some data on the adequacy of the sample achieved in this study should be presented. In April and May of 1959, a questionnaire was sent to each of the 6,827 seniors in the 1959 graduating class in the 78 4-year medical schools in the U. S. The students were asked to fill out the questionnaires anon-

* This is the second in a series of articles to appear in *The Journal of Medical Education* dealing with national goals for medical education.

This study was undertaken under the auspices of a grant from the Kellogg Foundation, which provides general support to the A.A.M.C. Division of Operational Studies. The authors would like to express their sincere appreciation to the Kellogg Foundation for the help provided in implementing this work.

† Assistant Director, Division of Operational Studies, A.A.M.C.

‡ Associate Director, A.A.M.C.

§ Executive Director, A.A.M.C.

ymously and return them to the A.A.M.C. office. It is a tribute to the excellent cooperation of the A.A.M.C. Continuing Group for Student Affairs in the data collection process that a nation-wide 72 per cent return based on the receipt of 4,899 questionnaires was achieved. This large a sample is even more remarkable when one considers that many of the schools had to administer the questionnaire during the very last week or two of the medical school year.

In any questionnaire study where returns are less than 100 per cent of the sample, one is always concerned as to whether the returned questionnaires are representative of the total group being surveyed. Since this was a nation-wide study of medical students in all U. S. 4-year medical schools, it is crucial that a satisfactory level of representativeness of sample be demonstrated in terms of geographical distribution and type of support of the schools (i.e., tax support and private support). The data on these dimensions are presented in Charts 1 and 2.

It will be noted from Chart 1 that the proportion of respondents to the questionnaire from each particular geographical area is almost identical with the proportion of the total number of students in the 1959 graduating class who attended medical school in each particular area of the country.

Chart 2 indicates similar results for

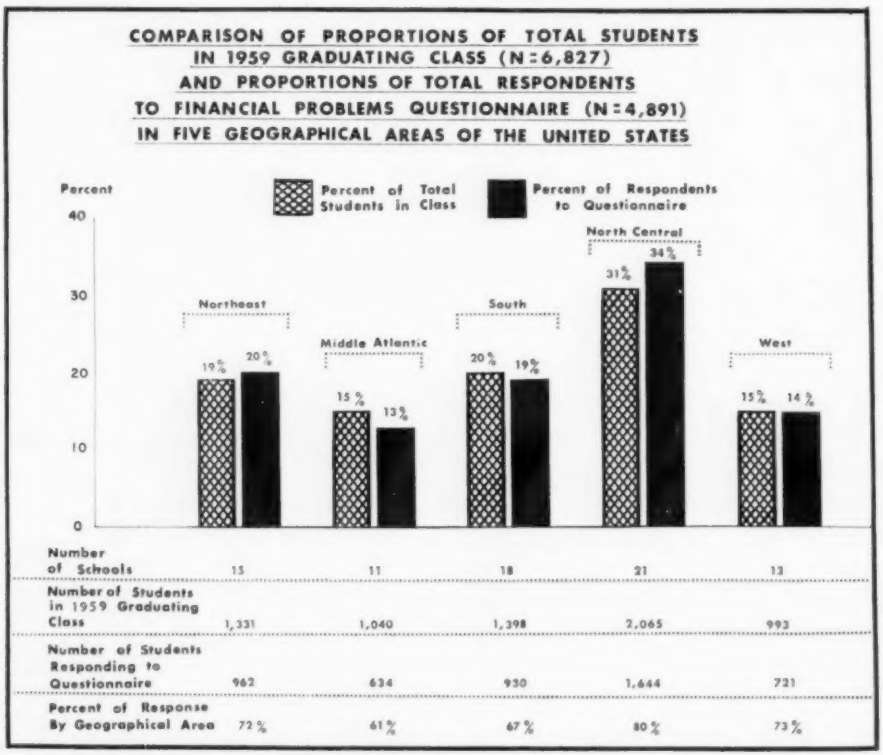

CHART 1.

the variable of type of support. That is, the proportion of respondents to the questionnaire attending each type of school is about identical to the proportion of the total number of students in the 1959 graduating class attending each type of school.

Another way to examine the nature of the sample is to analyze the distribution of percentage of response by schools. These data are presented in Chart 3.

It can be seen from Chart 3 that one-half of the 78 medical schools, or 39 schools, provided samples which were greater than 80 per cent of their 1959 graduating seniors. Next, 37 per cent of the schools, or 29 schools, provided samples between 50 per cent and 80 per cent of their 1959 seniors. Finally, 13 per cent of the schools, or ten schools, provided samples which were smaller than 50 per cent of the 1959 seniors.

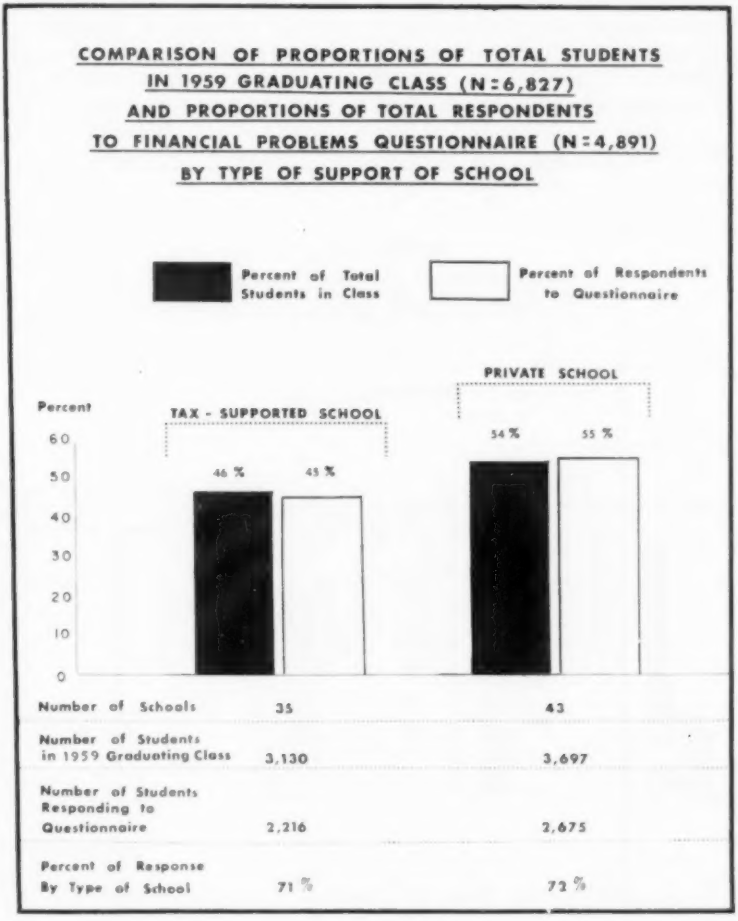
COMPARISON OF PROPORTIONS OF TOTAL STUDENTS IN 1959 GRADUATING CLASS (N=6,827) AND PROPORTIONS OF TOTAL RESPONDENTS TO FINANCIAL PROBLEMS QUESTIONNAIRE (N=4,891) BY TYPE OF SUPPORT OF SCHOOL
Percent of Total Students in Class
Percent of Respondents to Questionnaire
Percent
TAX - SUPPORTED SCHOOL
PRIVATE SCHOOL
60
50
40
30
20
10
0
46 %
45 %
54 %
55 %
Number of Schools 35 43
Number of Students in 1959 Graduating Class 3,130 3,697
Number of Students Responding to Questionnaire 2,216 2,675
Percent of Response By Type of School 71 % 72 %

CHART 2.

B. COMPARISON OF MEDICAL STUDENTS' AND ARTS AND SCIENCE GRADUATE STUDENTS' FINANCIAL SITUATIONS

A comparative analysis of the results of the A.A.M.C. study of medical students' financial status and a study by the National Opinion Research Center (NORC) of arts and science graduate students' financial status reveals striking differences in both the direct educational costs to the students and the means the students use in financing medical education as compared with arts and science graduate education (2).

1. *Educational costs.*—The direct items of educational cost to the medical students consist of tuition, fees, b and instruments. The direct items costs to arts and science graduate dents consist of tuition, fees, books journals, and thesis expenses. In case of either type of student, tui and fees form the bulk of a direct educational cost.

The average direct cost to the student of a medical school is about $1,000 a year, or $4,000 for 4 years of medical education leading to the M.D. degree. In contrast, the direct educational cost to the student attending a graduate school of arts and science averages around $450 a year, or $1,800 for a 4-year program of Ph.D. training. Thus, the average

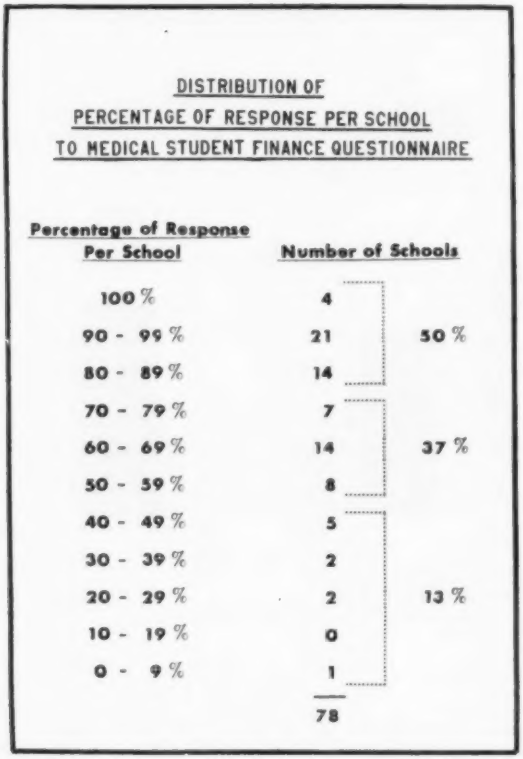

CHART 3.

medical student has to pay more than twice as much as the average graduate student for his education. Chart 4 presents this contrast in terms of the proportions of each group of students paying various amounts of direct educational expenses.

2. *Stipend income.*—Stipend income for both medical students and arts and science graduate students is defined as nonrefundable income provided by the school in which the student is studying, the acknowledged purpose of which is to enable the recipient to continue or complete his training. If work is required, the funds are considered to be stipends only if the work is involved with teaching or research in the student's own field and the employer is the student's own university. In general, stipend incomes for medical students and arts and science graduate students are derived from: (*a*) scholarships, (*b*) fellowships, (*c*) teaching assistantships, and (*d*) research assistantships.

About 50 per cent of the medical students receive some form of stipend income during their medical education. In contrast, 61 per cent of the arts and science graduate students receive stipend income during their Ph.D. training. However, the difference in proportion of medical students and arts and science graduate students receiving stipend income pales in significance when one contrasts the average dollar amounts received per student who receives such income in each group. The medical students who receive stipend income from any source or combination of sources receive an average of about $500 per year, or $2,000 during their 4-year period of medical education. The average arts and science student who receives

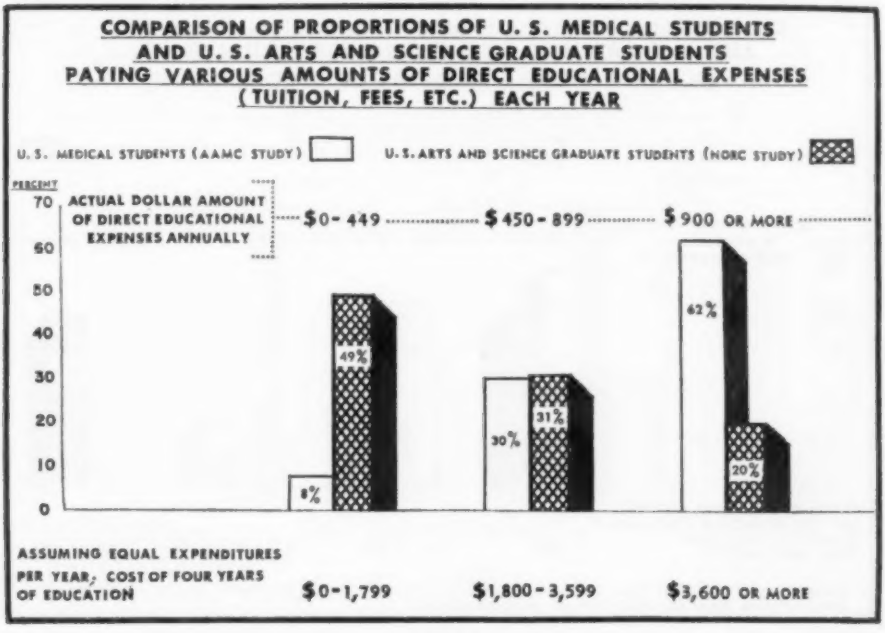

CHART 4.

stipend income is provided with roughly $2,000 per year, or no less than $8,000 over a 4-year period of Ph.D. training. Thus, the average arts and science graduate student who receives stipend income receives an amount annually which is equivalent to that received by the average medical student, who receives such income, during the entire 4 years of his medical education. Chart 5 presents this contrast in terms of the various proportions of students in each group receiving amounts of stipend income.

3. *Family help.*—Parental help has been defined as any nonrefundable gifts or interest-free loans which are provided the student by his family during his period of education.

The findings of the two studies indicate dramatic differences in the proportions of the two groups receiving parental help and also in the average amounts of help provided each student who did receive such help. Thus, fully 84 per cent of the medical students received some amount of help from their family during the 4 years of medical school. In contrast, only 22 per cent of the arts and science graduate students received such help. The average amount per medical student receiving family help is approximately $5,700. The average amount per arts and science graduate student receiving such help was approximately $3,700. Thus, almost 4 times as many medical students received help from their families as did arts and science graduate students. Those medical students who did receive such help received 50 per cent more in dollar value of help than was the case with the graduate students. Chart 6 presents this contrast in terms of the various proportions of the students in each group re-

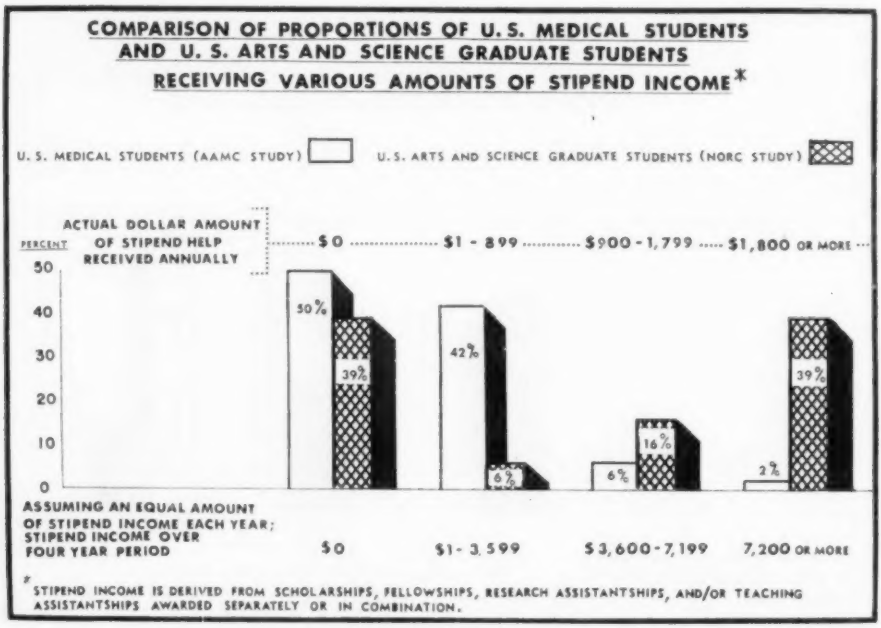

CHART 5.

ceiving various amounts of family help and loan assistance.

What is the cause of the discrepancy between the family help given to the medical students as contrasted with that given to the arts and science graduate students? Is it because of a difference in socio-economic status of the two groups of families? While the two studies used somewhat different indices of socio-economic level, it is clear that about 50 per cent of each group of parents come from the upper-middle or high income groups in our society. Thus, there is no evidence of a strong economic differential in favor of the parents of medical students as contrasted with the parents of graduate students.

Actually, the reason for the difference in family help appears to be supplied by the graduate students' answers to the question: "Will you receive any financial support from your parents this year?" Three out of every five of the students who did not receive any such help and 44 per cent of all the graduate students in the sample replied, "I don't need any support from them." The discussion on stipend income clearly indicates the basis of the validity of the graduate students' answers.

4. *Loans.*—Loan assistance has been defined as any financial advance made by family or friends, school, or commerical agency which must be repaid by the student and which is not involved with something that has resale value (i.e., car, house, etc.).

The findings of the two studies indicate that 47 per cent of the medical students have made loans, whereas only 9 per cent of the graduate students have made loans to meet their educational or living expenses. The average dollar value of the loans made to the medical student is $3,900, while the average loan made

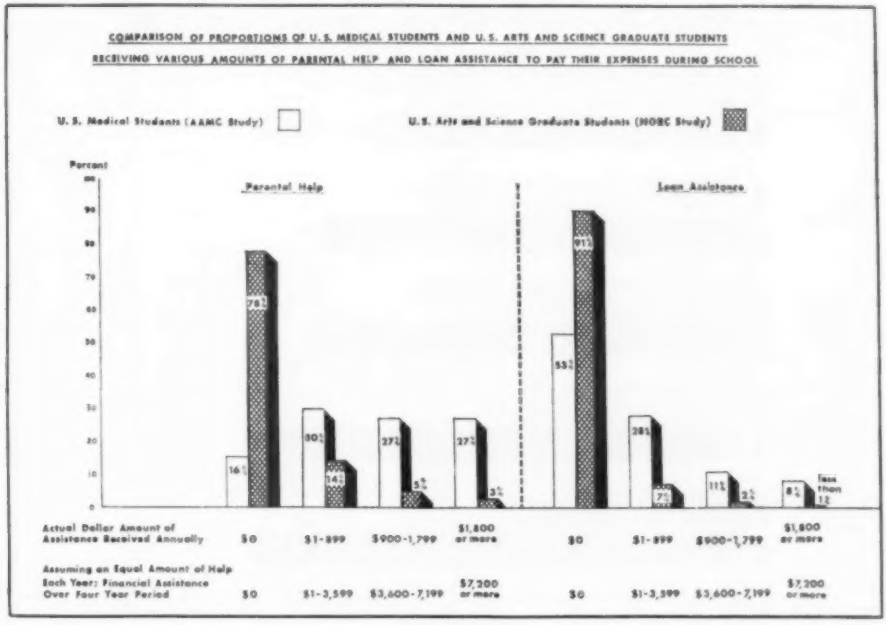

CHART 6.

to the graduate student is $2,500. Thus, more than 5 times the proportion of medical students as graduate students use loans as a means of defraying their expenses; and among the two groups of students, the average individual debt of the medical student is 1½ times that of the average graduate student.

C. MARRIAGE, FAMILY RESPONSIBILITY, AND THE MEDICAL STUDENT'S FINANCIAL SITUATION

A generation ago someone discussing the financial situation of the medical student would scarcely have considered the topic of marriage and family responsibility in such a report. Few medical students were married, and, of those that were, even less had children to support. Today, the situation is radically changed. During the past years, particularly since World War II, there has been a dramatic increase in the number of married medical students to the point where husbands and fathers constitute the clear majority of graduating seniors throughout the country.

Medical educators have been of several minds about the impact of marriage on medical education. Some have felt that marriage and family concerns tend to divert the student from his best efforts as a student, while others have felt that there are a number of beneficial effects of marriage on the medical student. Whatever one's opinion may be of the psychological and social impact of combining marriage and medical school, analysis of the present data leaves little doubt that marriage, and most particularly fatherhood, has a most potent impact on the student's financial situation and his perception thereof.

1. *The scope of marital status among*

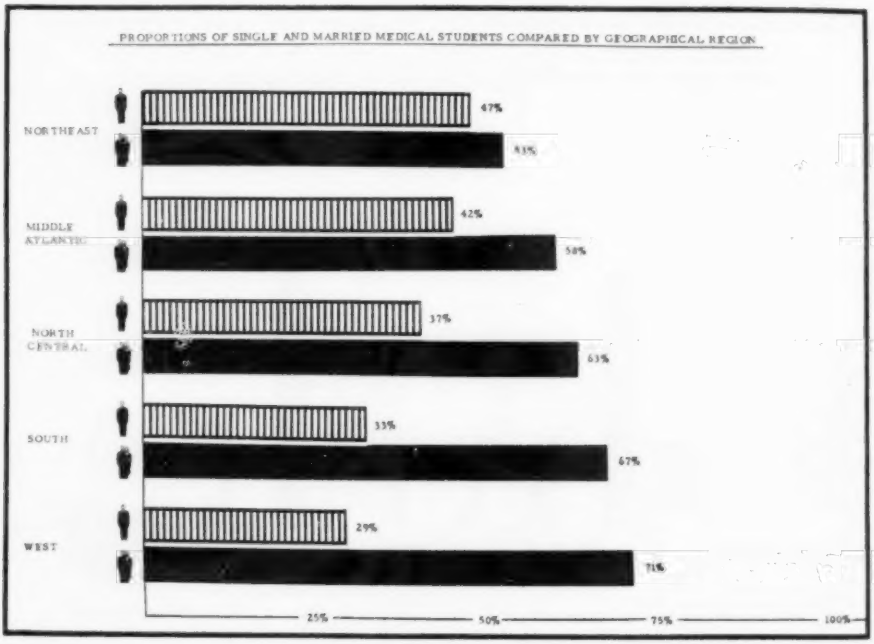

CHART 7.

medical students.—Analysis of the data shows that 62 per cent of the medical students in the 1959 graduating class were married, while 38 per cent were single. This fact is more striking when considered in terms of the proportions of single and married seniors in the various geographic regions of the U. S.

The proportions of single and married students shown in Chart 7 vary from a bare majority (53 per cent) of married seniors in the Northeast region of the U. S. to almost three-fourths of the seniors (71 per cent) being married at Western medical schools.

Further, the majority (54 per cent) of married senior medical students have one or more children. Stated differently, one-third of all graduating seniors are fathers, with at least one dependent child to support.

2. *Marriage, children, and the cost of medical school.*—Given this preponderance of husbands and fathers among graduating senior medical students, how do marriage and children relate to the costs of medical school? The basic data on direct education costs, food and lodging, and other costs are shown in Chart 8.

Perhaps the most dramatic fact portrayed in Chart 8 is the sharp rise in the over-all cost to the student of medical education as he becomes "more and more married." The students who are married and have two or more children have approximately 60 per cent more in the way of bills to pay ($16,000 = approximate 4-year average) than do the single students ($9,800 = approximate 4-year average). The difference, as would be expected, derives from the much larger amounts of expenditure for food, lodging, and other living costs paid by the students who are married and supporting two or more dependent children.

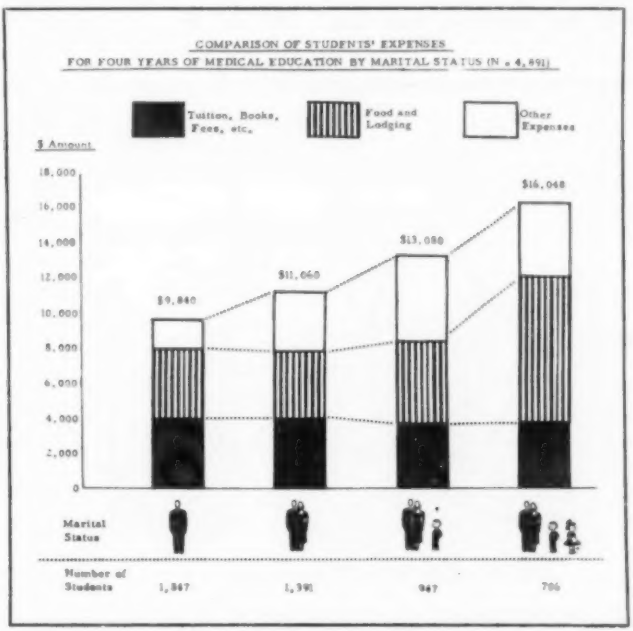

CHART 8.

When one compares the single students with the married students who do not have children, a somewhat different picture emerges. Indeed, in comparing these two groups on food and lodging costs, there is some evidence that "two can live as cheaply as one." However, the students who are married with no children pay almost twice as much for "other" living costs as do the single students. This difference would appear to be related to larger costs of furnishing living quarters, transportation, and clothes for working wives. Finally, the married students with children spend slightly less for tuition, fees, books, etc., than do single students or married students who do not have children. This difference appears to be related to two factors in the situation. First, a greater proportion of students who are married and have children are attending tax-supported schools than are attending private schools. Thus, their tuition costs would tend to be somewhat less than single students. Secondly, married students sometimes try to economize a bit by purchasing used books or instruments, or going to the library rather than buying books. This type of economy may have a detrimental effect on the student's academic achievement.

3. *Marital status and sources of help for payment of medical students' bills.*—In viewing a comparison of the married and single students' sources of help to pay their bills, it is important to keep in mind the fact that marriage adds a source of income for the male student (95 per cent of the sample are males), i.e., the working wife; but the appearance of children on the scene usually, for the time being at least, subtracts a source of income and adds to the cost of living for the duration of medical school.

There are five or six major sources upon which the medical student draws to pay his bills:

a) Gifts and loans from his parents or near relatives

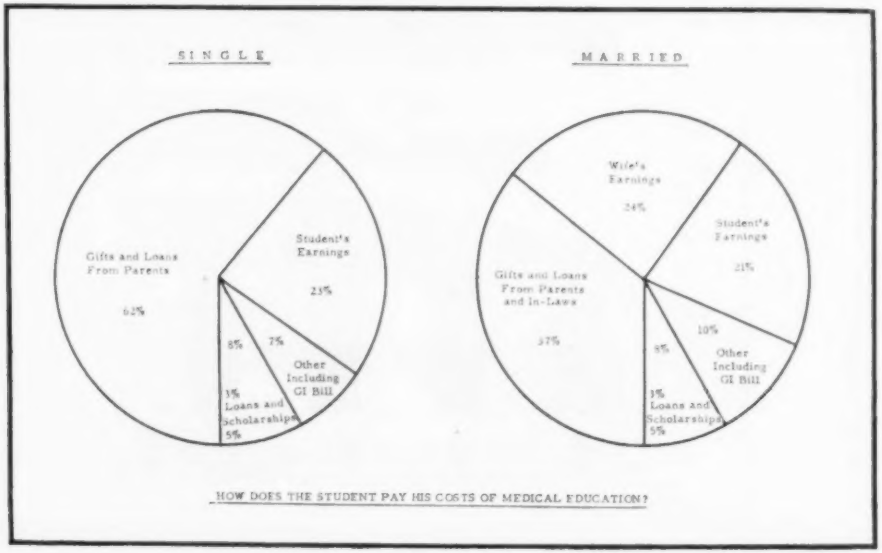

CHART 9.

b) His own earnings while going to school

c) If he is married, his wife's earnings and contributions from his in-laws

d) Loans from the medical school or a local financial agency

e) Nonrefundable scholarships from the medical school or other organizations

f) Other miscellaneous sources such as G. I. Bill

g) Savings prior to entering medical school, etc.

Chart 9 presents a comparison of the proportions of the total student body's financial resources drawn from each of these sources of funds.

Perhaps the most dramatic finding portrayed in Chart 9 is the fact that more than 80 per cent of the sources of funds used to pay the student's costs of medical education come from the student and his family. Given an average cost of $11,642, this amounts on the average to more than $9,500 per family. Less than 20 per cent of the financial resources used to pay the students' costs come from sources outside the family. These facts have both positive and negative implications. First, on the positive side, this fact attests to the willingness of the student and his family to use their personal resources in order that the student may achieve a medical education.

Secondly, on the negative side, many families, however willing they may be to undergo sacrifice, simply cannot afford to provide the student with this amount of financial resources. This fact is documented in Chart 10 below.

In Chart 10 the data on the family income of the medical student has been compared with two specific reference groups: (*a*) the 6919 families in the U.S., who in 1960 provided the National Merit Scholarship Corporation, Evanston, Illinois, with detailed financial information as part of an application for a National Merit Scholarship for their son or daughter; (*b*) the U.S. Census

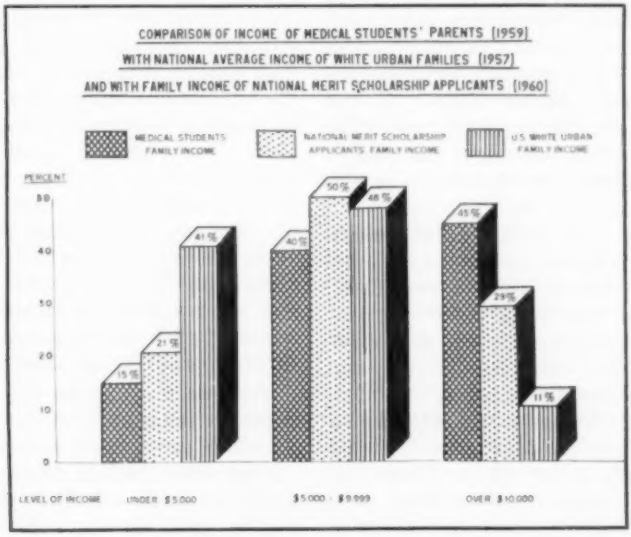

CHART 10.

Bureau 1957 sample of White Urban Families in the United States.

A word or two of description of the National Merit Scholarship population may help the readers interpret Chart 10 more effectively.

The 6919 National Merit Scholarship applicant families are part of a larger group of 10,541 semi-finalists in the 1960-61 merit scholarship competition; 3134 families of this total of 10,541 semi-finalists requested minimum stipends from the National Merit Scholarship Corporation, and therefore, were not required to submit detailed financial information. Another 464 families among the 10,541 semi-finalists returned these forms too late for inclusion in the 1960 National Merit study of family income. Thus, the National Merit Scholarship population used for comparison with the 1959 medical students' families is that group which provided specific income data which would allow for specific comparisons of dollar amounts of income between the two groups of families.

Secondly, the levels of income for the National Merit Scholarship applicants' families were derived from the income tax payment data provided by the applicant families. Earlier studies by the National Merit Scholarship Corporation indicate that the amount of tax paid is a most valid and reliable index of family income level.

Third, the National Merit Scholarship Applicant Group was chosen for comparison with current medical students' families because the winners of National Merit Scholarship represent the upper 2 per cent of intellectual ability and scholastic achievement among the U.S. high school graduates. This is the group from which the medical schools would like to recruit a fair share. Therefore, the family income level of these students needs to be studied in relation to that of current medical students' family's income in order to make a sound appraisal of the need for financial support of future medical students.

The data in Chart 10 indicate clearly that there is a smaller proportion of medical student families from lower income levels and conversely, a larger proportion of medical students from families with an income of $10,000 or more than is the case with the families of National Merit Scholarship applicants. This difference in family income level is even more dramatic when one compares the income level of medical student families with the income levels of the white, urban population of the U.S. Thus, the fact is that today personal financial need is a bar to the study of medicine in this country. A positive program of financial assistance to medical students is necessary if this situation is to be eliminated.

Next, the specific sources of funds can be examined one by one. Gifts and loans from parents and relatives comprise the largest single source of funds available to the student to pay his bills. This is true for both single and married students. Moreover, this is the source that is most frequently drawn upon by the students. Eighty-four per cent of all students use this source, although use of this source tends to decline as students marry and have children (90 per cent of the single students use this source, whereas only 77 per cent of those students who are married and have two or more children use it). Single students receive an average of $6,300 from their families, while married students receive an average of $5,200 from this source.

Next in size among the sources of funds are the students' own earnings and his wife's earnings, if he is married. It is interesting that the students' earnings comprise about one-fifth of their resources whether they are married or single. Thus, among the married stu-

dents, the wife's earnings tend to supplant gifts and loans from parents rather than decrease the amount of income derived from the student's own employment.

The proportion of students who use summer earnings as a source of financial support is about 70 per cent irrespective of marital status and number of children to support. Similarly, both married and single students derive roughly the same amount of income, on the average, from this source (about $1,700–$1,800 over 4 years). On the other hand, earnings during the school year vary by marital status both in terms of proportion of students using this source (50 per cent of single students vs. roughly 70 per cent of married students with two or more children) and also in terms of amount of income derived from this source ($1,900 = approximate 4-year average for single students vs. $2,900 = approximate 4-year average for married students with two or more children.)

Wife's earnings provide about one-fourth of all the funds used by married medical students to pay their bills for medical education. Among the married students, 65 per cent report the use of wife's earnings as a source of income, with an average of $4,800 being derived from this source. It is particularly noteworthy that a majority of the married students with two or more children (51 per cent) report the use of wife's earnings as a source of funds. Without doubt, the prevalence of working wives and mothers adds considerable strain to the marital relationship of many medical students.

Finally, loans and scholarships account for approximately 8 per cent of the students' sources of funds, with the remaining 7 per cent and 10 per cent being derived from other miscellaneous sources including the G.I. Bill. Approximately equal proportions of married and single students use scholarships as a source of funds—i.e., roughly one-fourth of both single and married students receive help from this source with each recipient receiving approximately $1,700 over a 4-year period. Thus, on a nation-wide basis *for those who receive scholarships*, these scholarships account for an average of approximately 15 per cent of their costs of education.

Marital status does have an effect on the use of loans as a source of funds. About 20 per cent of the single students apply for loan assistance, while 45 per cent of the students who are married with two or more children make such applications. The average amounts of loan funds received in each marital status group does not vary significantly (4-year average = $1,700).

As expected, the married students with two or more children used the G.I. Bill more frequently as a source of funds than did the single students. However, age, and, hence, veteran status is the essential variable here. Six per cent of the single students use this source (4-year average = $3,400), whereas 24 per cent of the students who are married with two or more children use this source (4-year average = $3,800).

Gifts and loans from in-laws comprise only about 3 per cent of the married students' sources of funds. However, among those students who are married and have children, approximately one-fourth report use of the source, with an average $2,200 being received from the source.

4. *The student's perception of his financial situation.*—So much for the facts and figures regarding medical student expenses and sources of help available to meet these expenses. The less concrete but equally important area of the students' perceptions of the relationships between their financial situation and

medical school now merits examination. In order to get at the essence of the student's reaction to his financial situation while in medical school, the students were asked to choose which of the following five statements was most descriptive of their attitudes toward finances during their 4 years of medical education.

1. "I am so sick of penny-pinching that I'm going to put financial security at the top of my list of objectives in the practice of medicine."

2. "If I had known how much medical school would cost, I probably would have selected some other career."

3. "Medical school has been very rough financially, but I would not hesitate to do it again, even if I knew all of the difficulties ahead."

4. "My financial problems have been minor and have had no bearing on my feeling about my career."

5. "I have had no financial problems in medical school."

In designing these five statements, an effort was made to cover the entire range of possibilities from the student who was so pressed by financial problems that he was tempted to make another career choice or adopt values which were not in keeping with the best traditions of medical service to the community, to that of the student who had no financial problems whatsoever.

Disregarding marital status for the

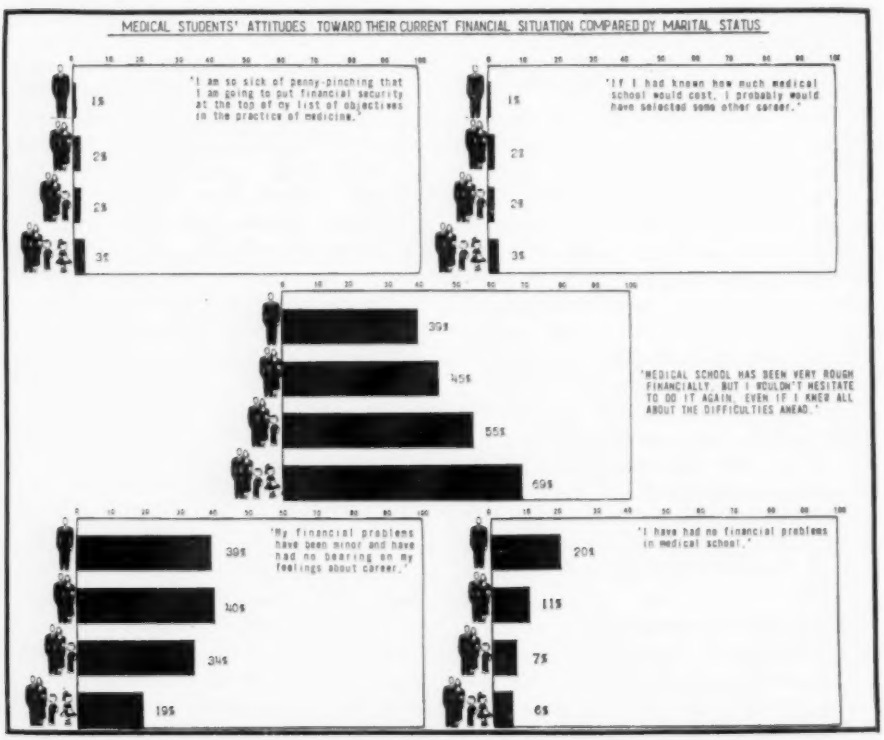
MEDICAL STUDENTS' ATTITUDES TOWARD THEIR CURRENT FINANCIAL SITUATION COMPARED BY MARITAL STATUS
"I am so sick of penny-pinching that I am going to put financial security at the top of my list of objectives in the practice of medicine."
1%
2%
2%
3%
"If I had known how much medical school would cost, I probably would have selected some other career."
1%
2%
2%
3%
"MEDICAL SCHOOL HAS BEEN VERY ROUGH FINANCIALLY, BUT I WOULDN'T HESITATE TO DO IT AGAIN, EVEN IF I KNEW ALL ABOUT THE DIFFICULTIES AHEAD."
39%
45%
55%
69%
"My financial problems have been minor and have had no bearing on my feelings about career."
39%
40%
34%
19%
"I have had no financial problems in medical school."
20%
11%
7%
6%

CHART 11.

moment, an over-all analysis of responses to the above statements indicates that the 1959 graduating students were divided approximately 50-50 between those who felt that medical school has been very rough financially (48 per cent) and those who felt that finances were of little or no concern to them in medical school (48 per cent). Only a small minority of students (4 per cent) indicated that they would either choose values alien to medical tradition (i.e., put financial security as their primary objective in medical practice) or be tempted to choose another career if they had to do it over again. These results correspond point for point with the proportions of students who have incurred liabilities during medical school (loans and other debts, 52 per cent), and those who finish medical school without liabilities (48 per cent).

Chart 11 presents the proportion of medical students in each marital status category whose attitudes toward their financial situation in medical school were characterized by each of the five statements mentioned earlier.

It is clear from Chart 11 that the degree of family responsibility is directly related to the extent to which the medical students' perceive themselves as having real financial difficulties in medical school. Thus, about four out of ten of the single students perceive medical school as being "very rough financially," whereas about seven out of ten of the student-fathers, who have two or more children to support, view medical school in this manner. Conversely, more than

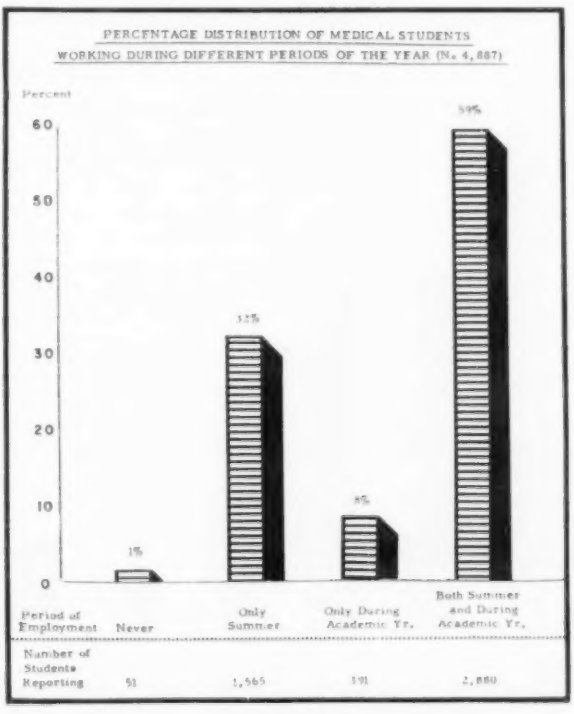

CHART 12.

twice the proportion of single students (59 per cent) perceive their financial situation as having had little or no bearing on their medical school career as is the case with the married students who have two or more children (25 per cent).

5. *Marital status and student employment.*—There are several basic dimensions of student employment upon which single and married students can be compared. These can be examined in light of the following general questions:

a) During what period of the year does the student work?

b) How many hours a week does he work?

c) What type of work does he do?

Chart 12 presents the proportions of students employed during different periods of the year.

The majority of students, irrespective of marital status, are employed both during the summer and during the academic year. Marital status has some effect on this fact, however—i.e., approximately 10 per cent more of the married students with children work during both periods (64 per cent) than is the case with the single students (55 per cent). Further, the proportion of students who work only during the summer drops significantly between the single students (38 per cent) and those students who are married with two or more children (23 per cent). Finally, for some reason that is not particularly clear, the proportion of students working only during the academic year rises, somewhat, as a function of marital status. Thus, only 6 per cent of the single students work only during the academic year, whereas 12 per cent of the students who are married and have two or more children work only at this time. One can only speculate that medical student fathers may be more drawn to positions such as teaching or other types of jobs which

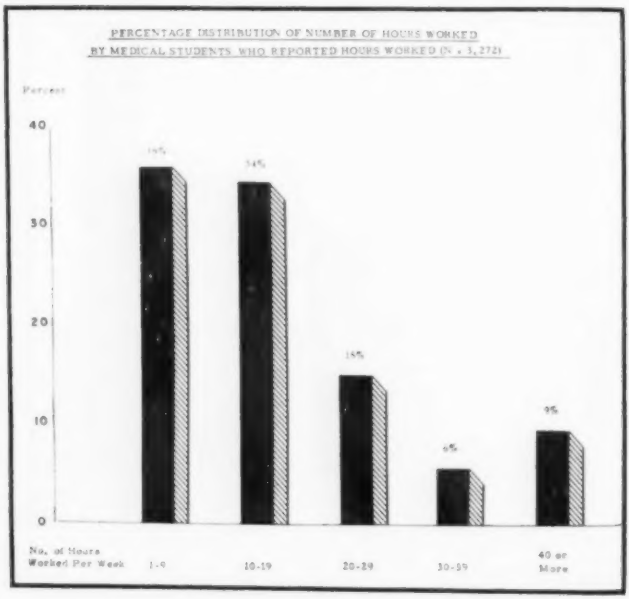

CHART 13.

TABLE 1

TYPE OF WORK PERFORMED BY MEDICAL STUDENTS*

(N = 2,856)

	All Students	
	N	Per cent of total
1. Teaching or research in medical school	367	13
2. Other work related to medical education:		
a) Paid externship	1,006	35
b) Laboratory technologist or assistant in medical school	657	23
c) Medical work in med. school other than laboratory tech. or assist.	211	7
d) Med. work outside school or hospital	102	4
e) Armed forces senior medical student program	10	<1
	82	
3. Work not related to medical education:		
a) Clerical including sales	151	5
b) Labor, skilled or unskilled	130	5
c) Nonprofessional work related to patient care in hospitals	94	3
d) Non-med. work in med. school	57	2
e) Professional occupations (dentist, pharmacist, etc.)	40	2
f) Intellectual occupations (tutor, statistician, etc.)	31	1
	18	

* 2,856 students out of 4,836, or 59 per cent who indicated that they had a work history answered the question concerning type of work.

are only available when school is open than are single students.

Chart 13 presents the average number of hours worked per week. All students who report their hours of employment work approximately 15 hours per week. However, the students who are married with children tend to work slightly longer hours than do the single students.

The next point to consider is the type of employment in which students are engaged. Analysis of the data on this question indicates that marital status does not significantly affect the proportions of students who are employed in different types of part-time occupation during the medical school year. Therefore, the proportions of *all* students employed in different types of jobs are indicated in Table 1.

Caution must be exercised in interpreting the results of Table 1, since only roughly 60 per cent of the students who reported that they had a work history answered the question concerning type of work. From the results as they stand, it would appear that the large majority of medical students are working in positions that are somehow related to their medical education. However, the 40 per cent of the students who did not answer this question may be predominantly employed in nonmedically related jobs and may have failed to acknowledge this fact for fear of some kind of untoward consequences. The fact that this is one of the very few questions in the entire questionnaire which showed such a sharp drop in the number of students answering a given question in comparison with the number of students answering similar questions perhaps lends some weight to the suggestion of cautious interpretation.

Before leaving the discussion of medical student employment, some specific data on the clinical externship should be presented. Many medical educators have expressed concern about the value of the paid clinical externship to the student pursuing a medical education.

First, the data on the 1959 graduating

seniors indicate that the majority (55 per cent) of these students (i.e., 2,700 out of 4,887 students) answered affirmatively to the question "Did you have a paid clinical externship in medical school?" These data are at variance with the data on paid clinical externships derived from the question "What type of employment did you have in medical school?" However, both sets of data indicate that the paid clinical externship is one of the predominant types of employment carried on by medical students during their 4 years of medical education.

Second, among the 2,700 students who indicated that they had a paid clinical externship during medical school, about two-thirds (68 per cent) indicated that these externships were performed in hospitals which were not affiliated with the students' medical school. In contrast, about three out of ten (29 per cent) of the students who had externships served these externships in medical school-affiliated hospitals. A small percentage of the students (3 per cent) served externships in both types of hospitals.

Finally, the average duration of these externships was approximately 11 months, and the average number of dollars earned per month by the student holding an externship was $117. The average total externship stipend was $1,287 or approximately 10 per cent of the average total cost of medical school ($11,642).

6. *Loans, scholarships, and fellowships: A discussion of the relationship*

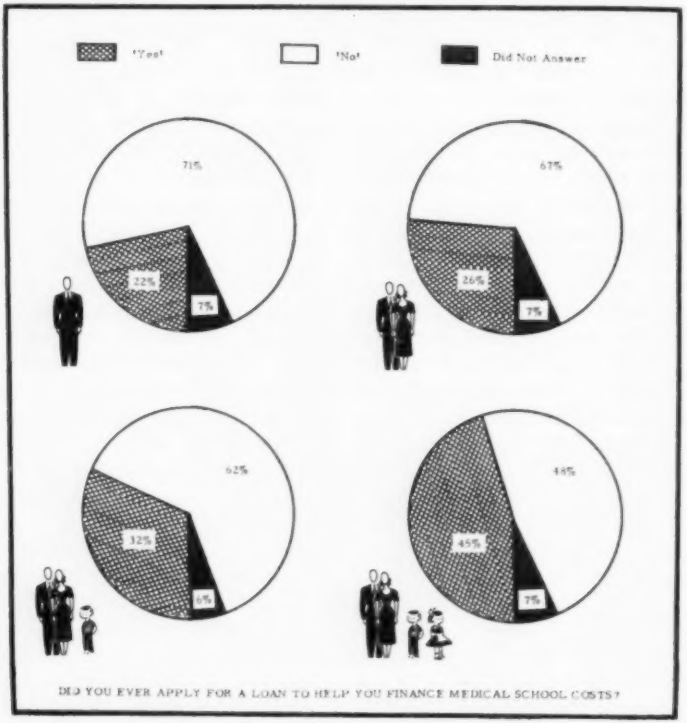

CHART 14.

between marital status and financial assistance from sources outside the family.—The granting of loans, scholarships and/or fellowships has been the time-honored method which institutions of higher education have used to provide financial assistance to students. These awards are usually based on either scholastic excellence, financial need, or a combination of these factors. In the present section each of these types of financial aid will be taken up separately and examined in terms of what relationship, if any, exists between the various dimensions of these awards and the type of marital status of the medical student.

a) Loans: When one compares each of the three types of financial help under discussion here, analysis of the data indicates that marital status is most clearly related to loan assistance—i.e., in general, the "more married" the students are (i.e., the more dependents they have to support) the more they get involved in loan assistance.

Chart 14 presents the first bit of evidence which supports this conclusion. In this chart, the proportions of medical students of varying types of marital status who have applied for loans to help them finance their medical school costs have been portrayed.

As can be seen, there is a definite rise in the proportion of students applying for loans at some time in their medical school careers, from 22 per cent of single students, through those who are married and have either no children or only one child (26 per cent and 32 per cent respectively), to 45 per cent of the students who are married and have two or more children. This finding is clearly related to the married students' higher total expenses during medical school and their relatively lesser use of their parents and relatives as a source of funds to meet their expenses.

Chart 15 presents the data in answer to the next logical question in discussing loan assistance: How many of the students who apply for loan assistance receive it and how much do they receive?

Chart 15 indicates that there is a positive relationship between the length

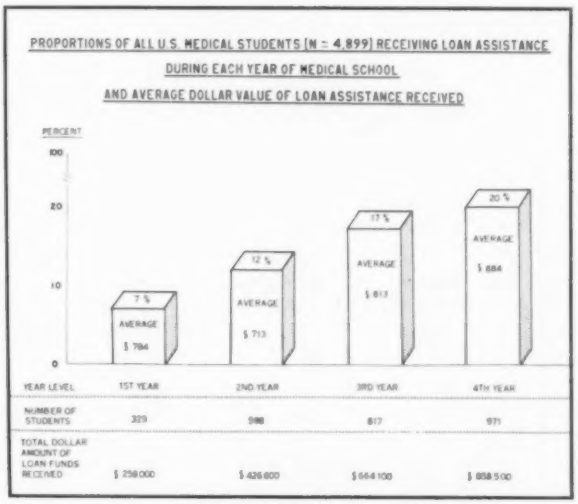

CHART 15.

of time spent in medical school and the proportions of students requesting loans. The length of medical school experience and the amount of loan funds received are also positively correlated. In the first year 7 per cent of the students received loan assistance in an average amount of $784. By contrast, in the 4th year of medical school, 20 per cent of the 1959 graduating class received loans in an average amount of $884.

Analysis of the data indicates that martial status does not have a decisive effect on the amount of loan assistance received within a given year level. Further, roughly equal proportions of each marital status group apply for loans within a given year level.

The next question which needs to be examined in analyzing the relationship between marital status and loan assistance is: How many students would request additional loan assistance beyond what they already received if funds were available from an expanded program of financial assistance, and how much more loan assistance would they request?

Chart 16 presents the data in answer to this question from the 1959 graduating class of medical students.

The data indicated that, on an over-all basis, some 10 per cent of all senior medical students in the 1959 graduating class would have requested an average of $5,336 (per student) of additional loan assistance beyond what they received during their 4 years of medical school, if funds had been available. If one anticipates classes of between 8,000 and 10,000 medical students during the coming years, this suggests that $4,000,000 to $5,000,000 worth of *additional* loan assistance per year is needed in the view of the medical students.

Study of Chart 16 shows clearly that, with additional loan assistance requests which would be made if funds were available, the "more married" the student, the more he needs and wants loan assistance. Thus, only 7 per cent of the single students would make additional requests for loan assistance, whereas 18 per cent of the students who are married with two children would make such requests.

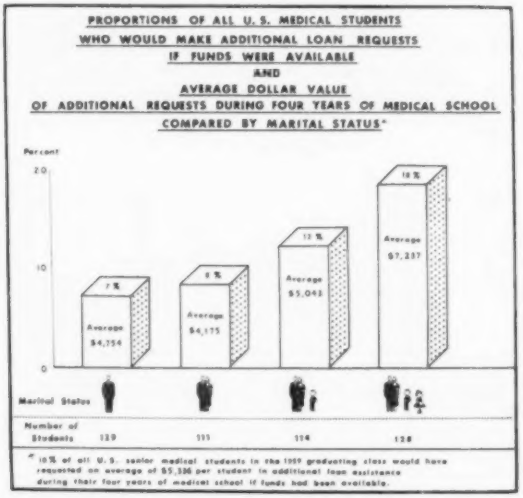
PROPORTIONS OF ALL U. S. MEDICAL STUDENTS
WHO WOULD MAKE ADDITIONAL LOAN REQUESTS
IF FUNDS WERE AVAILABLE
AND
AVERAGE DOLLAR VALUE
OF ADDITIONAL REQUESTS DURING FOUR YEARS OF MEDICAL SCHOOL
COMPARED BY MARITAL STATUS*
Percent
20
10
0
7 %
Average $4,754
8 %
Average $4,175
12 %
Average $5,043
18 %
Average $7,237
Marital Status
Number of Students
139
111
114
128
* 10 % of all U. S. senior medical students in the 1959 graduating class would have requested an average of $5,336 per student in additional loan assistance during their four years of medical school if funds had been available.

CHART 16.

TABLE 2

PROPORTIONS OF ALL 1959 GRADUATING MEDICAL STUDENTS INDICATING WAYS IN WHICH AVAILABLE AND AMPLE LOAN ASSISTANCE WOULD HAVE HELPED THEM IN FINANCING MEDICAL SCHOOL COSTS

(N = 4899) Ways in which loans would help all students:	N	Per cent of all students
1. Reduction of hours spent in outside employment	1298	26
2. Decrease anxiety about financial problems	1645	34
3. Relieve strain on parents	1899	39
Ways in which loans would help if married:	**Married students (N = 3037)**	
1. Ease domestic strain due to money matters	912	30
2. Make outside work by wife unnecessary	818	27

Further, the average amount of additional loan assistance which would be requested during the 4 years of medical school is much greater for the married students with multiple dependents (average = $7,237) than is the case for the single students (average = $4,754).

The next question to be discussed in looking at the relation between marital status and loan assistance is: If readily available and ample loan funds had been available, how would they have helped?

The first aspect of this question which can be examined is the proportion of all students reporting a specific way in which ample loan assistance might help their situation. The data on this point are indicated in Table 2.

Table 2 demonstrates clearly that each of the various ways in which loan assistance might be helpful is perceived by a significant proportion of all students as being applicable to their case. Secondly, there exists a definite hierarchy among these various grounds for loan assistance—i.e., the greatest proportion of students (roughly two out of every five students) perceives loan assistance in terms of relief of strain on parents; next, about one-third of the students feel that ample loan assistance would help to decrease their anxiety about financial problems, whereas about one-fourth feel that loans would allow them to reduce the number of hours they spend in outside employment.

Among the married students roughly equal proportions (30 and 27 per cent) indicate that ample available loan funds would help to ease domestic strain due to money matters and make outside work of medical students' wives unnecessary.

These results are vitally related to the information presented earlier in this report in relation to costs of medical education, sources of funds, student employment, etc.—i.e., while it is true that the average student and his family are providing 80 per cent of the costs of his medical education, for many students and their families this is a matter of considerable stress and difficulty. Loan assistance could definitely help to relieve this situation. These results also indicate that a sizable proportion of students would be prepared to mortgage their future income in order to reduce the necessity of outside employment. Finally, it has been noted that the student's financial problems have a definite bearing on his marital adjustment, which in turn influences his scholastic efficiency while in medical school. Clearly, a significant part of all married students feel that ample loan assistance would contribute to their familial adjustment.

The next point to be examined in detail is the relationship of marital status to the student's perception of how loan assistance would help him in meeting his financial problems. In this part of the discussion, only those students of varying types of marital status were considered who indicated a need for loan

assistance by checking one or more specific ways in which loan assistance would help their situation. That is, in Table 2 *the general results for all students were portrayed.* In Chart 17 on the other hand, we have dealt only with those who indicated definitely that *loans would help their situation.* The percentages shown in Chart 17 were derived by dividing the number of students with a given type of marital status who checked a particular way in which loans would help, e.g., "reduction of hours spent in outside employment," by the number of students with the same type of marital status who replied to any part of the question. Thus, among the 1,013 single students who replied to the question, 394 or 39 per cent (as shown in Chart 17) answered that loan assistance would tend to reduce the number of hours they spent in outside employment.

The results shown in Chart 17 give further confirmation to the previous discussion of the fact that, as the students become "more married," more and more of them, of necessity, become involved with loan assistance. This chart provides some basic data on the subjective aspects of the students' feelings about loan assistance and the need for it, as this need relates to their marital status.

It is interesting to note that roughly equal proportions (about two out of

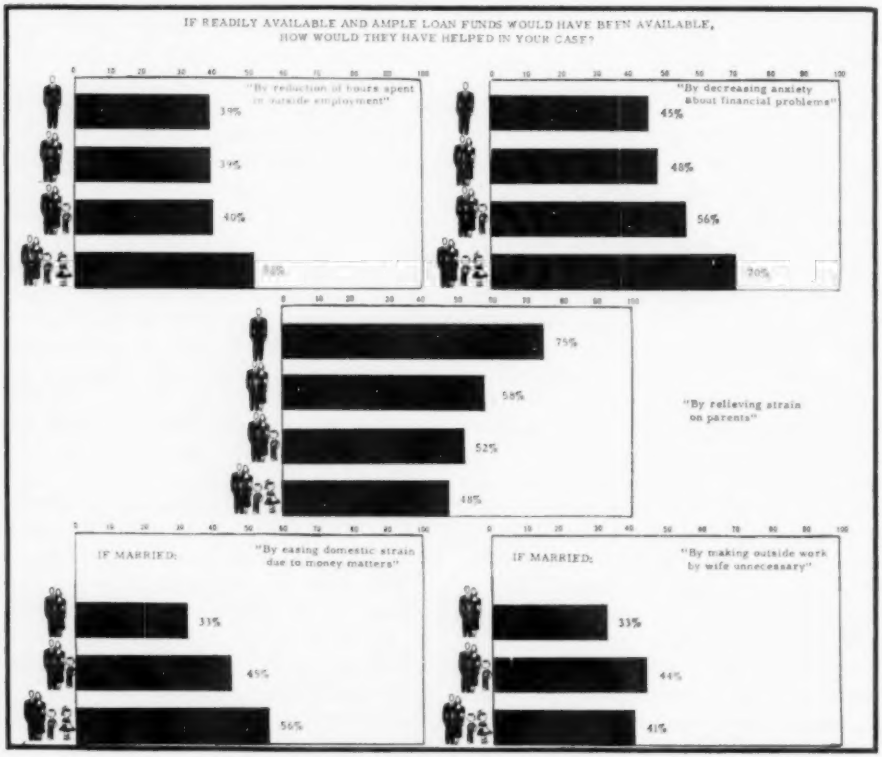

CHART 17.

five) of the students who are either single, or married with no children or only one child, feel that loans would help to *reduce the number of hours spent in outside employment.* In contrast, a significantly larger proportion (about one in two) of the students who are married and *have multiple dependents to support,* perceive loan assistance in terms of helping to reduce outside employment. The reader will recall that the latter type of student worked a longer number of hours per week in order to make ends meet, on the average, than did the former types of students. Moreover, in view of the fact that the student who has two or more children needs to assume more responsibility in terms of child-rearing than do the other types of students, the greater proportion of such students emphasizing reduction of number of hours of outside employment as a way in which loan assistance can help them becomes quite understandable.

Secondly, Chart 17 portrays a direct relationship between the degree of family responsibility the student bears and the proportions of students who feel that loans assistance would help to *decrease their anxiety about financial problems.* Thus, as the students assume more family responsibility, more and more of them become concerned over the need for financial help, because of increased expenses during this period of medical

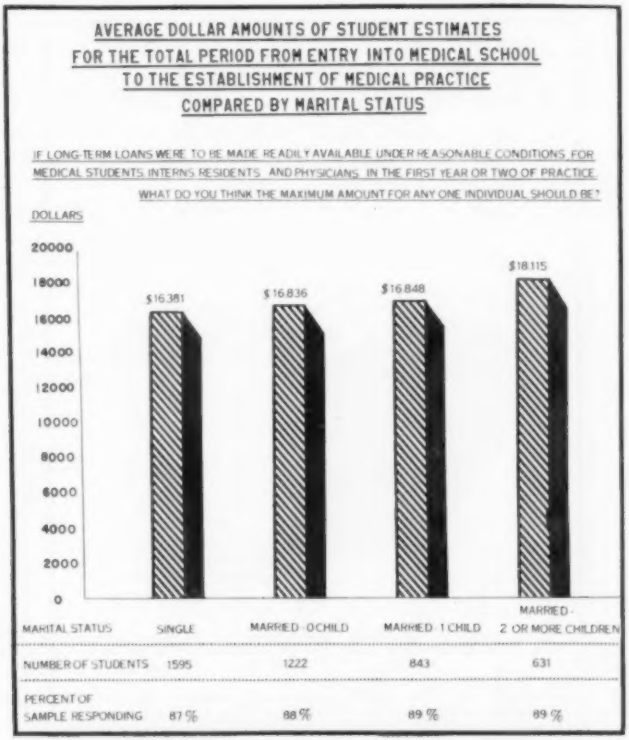

CHART 18.

education; and more and more of them feel that loan assistance is at least a partial answer to their problems.

The third way in which loan assistance can help medical students is to relieve the strain on their parents' financial resources and to allow the students themselves to assume direct responsibility for financing their education. As would be expected from the previous discussion of the greater dependence of single students on their parents as sources of funds, it was found that there is an *inverse* relationship between the degree of family responsibility and the proportions of students who perceive loan assistance in terms of providing relief for strain on parental financial resources.

If one turns to those ways in which married students could profit from loan assistance, the results of the study indicate that there is a direct relationship between family responsibility and the proportion of students who perceive loan assistance in terms of *easing domestic strain due to money matters*. Even so, as many as one-third of those married students who do not have any children to support and whose wives are potentially free to take full-time jobs feel that loan assistance would help to ease domestic strain. It is therefore not surprising that an even greater proportion of students who are supporting dependent children view loan assistance in these terms.

Finally, with respect to loan assistance as a means toward *reducing the neces-*

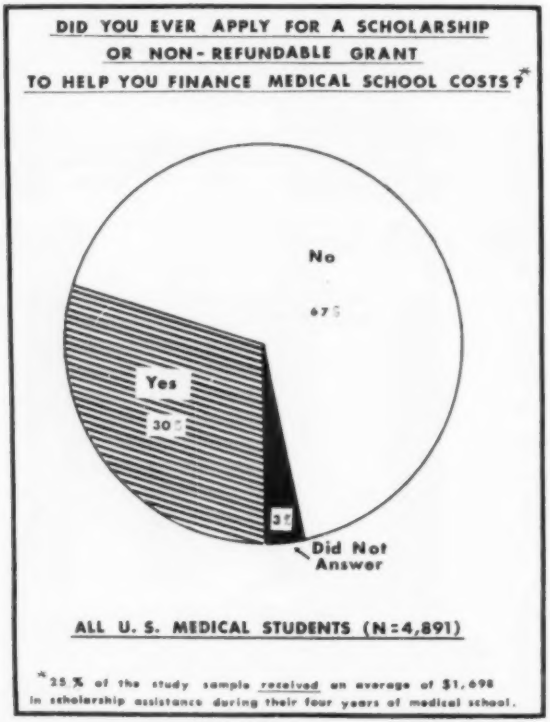
DID YOU EVER APPLY FOR A SCHOLARSHIP
OR NON-REFUNDABLE GRANT
TO HELP YOU FINANCE MEDICAL SCHOOL COSTS?*
No
67%
Yes
30%
3%
Did Not Answer
ALL U. S. MEDICAL STUDENTS (N=4,891)
*35% of the study sample received an average of $1,698 in scholarship assistance during their four years of medical school.

CHART 19.

sity of outside work by medical students' wives, in each of the three groups of married students, a third or more of the students feel that such assistance would be helpful in this respect. Once again, in this context it is important to note the relatively large proportion of students who have two or more children and who have working wives (57 per cent). As the results in Chart 17 show, a large proportion of these students see loan assistance as a means of solving the many problems created when the mothers of dependent children need to work in order to meet the family's bills.

With the above facts about how readily available and ample loan assistance would help medical students in various marital status categories, one can now consider a final question the students were asked concerning loan assistance. This question is as follows: How much loan assistance do you feel should be available to the budding physician for the total period from entry into medical school through internship and residency to the establishment of medical practice? The responses of the students in the various marital status categories are shown in Chart 18.

Chart 18 indicates that the students feel that the maximum amount of loan assistance which should be provided to any one individual during his total period of medical training and establishment of practice is roughly $17,000. The students who are married and have two children suggest a somewhat larger amount than do the students in other marital status groups.

b) *Scholarships*: Analysis of the data on scholarships indicated that there was little direct relationship between marital status and the various dimensions of scholarship aid. This is true for (*a*) the proportions of students in the various marital status categories *applying* for scholarship aid, (*b*) the proportion of students in the various marital status categories who *received* scholarship assistance, and (*c*) the *amount* of scholarship assistance received by students in various marital categories. Thus, whereas a student's marital status may be taken into account when a given in-

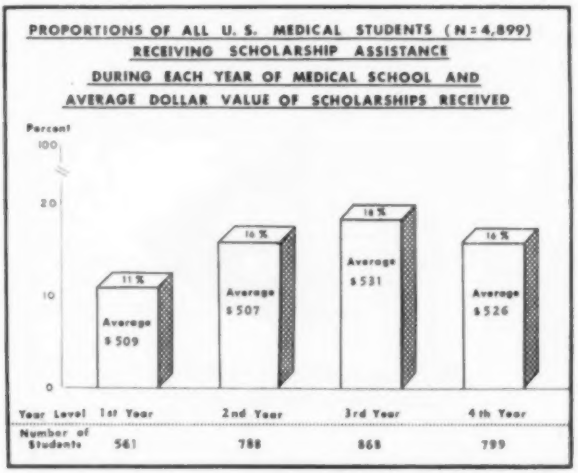

CHART 20.

dividual school considers scholarship help for a particular student, in general, each of the four marital status groups are about equal with respect to these dimensions.

Chart 19 presents the data for all students in the sample concerning the question as to whether they did or did not apply for a scholarship during their medical school years. As will be noted, roughly one-third of all students made application for scholarship help, while about one-fourth of all students received some amount of scholarship help during medical school. Among those who received such help, the average dollar amount of scholarship aid during the 4-year period was approximately $1,700.

Chart 20 presents a specific analysis of the proportion of 1959 graduating seniors who received scholarship aid during a particular year of their medical school experience and the average amount per year of scholarship aid which was granted per student. The data indicate that, while there is a slight rise during the second and third year of medical school in both the proportions of students receiving scholarships and the amount of help these students receive, these differences are negligible.

A third aspect of scholarship aid which needs to be examined is the basis on which this aid is granted.

Chart 21 presents the data relevant to this facet of the total picture. Our analysis indicates that the majority of

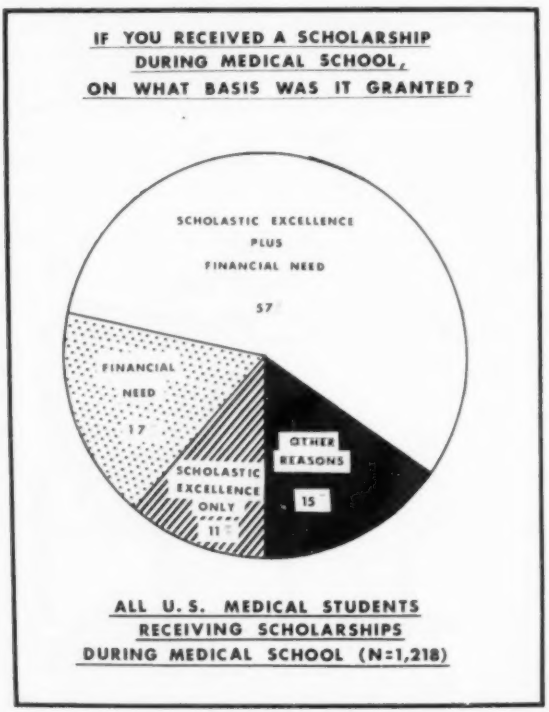

CHART 21.

scholarship aid provided to medical students is granted on the basis of a combination of scholastic excellence and financial need, as determined by the granting agency.

The next dimension of the scholarship situation which will be examined is that of the number of students who would make additional scholarship requests if ample funds were available, and the amount of additional help of this kind that they would request.

The results presented in Chart 22 indicate that, unlike the other aspects of the scholarship picture, there does exist a direct relationship between family responsibilities and additional scholarship requests. Thus, 20 per cent of the single students would request more aid if available, while 30 per cent of those who are married with two or more children would make such requests. The amounts which would be requested show a similar direct relationship between marital status and average dollar value of request. Special attention needs to be paid to the considerable difference in average size of requests between those who are married with one child (average = $3,874) and those students who are married with two or more children to support (average = $5,039).

Another interesting aspect of this question of additional requests for financial help lies in the contrast between the additional loan request data and the additional scholarship request data. A comparison of Charts 16 and 22 indicates that, whereas a *greater proportion of students* would request additional scholarship aid than would request additional loan help, those who would make such requests would ask for a *smaller dollar amount* of scholarship aid than of loan assistance and vice versa. That is, the proportion of students who would ask for additional loan assistance is smaller than the proportion who would request additional scholarship assistance. However, those who would ask for additional loan assistance would ask for *greater amounts* than would those who

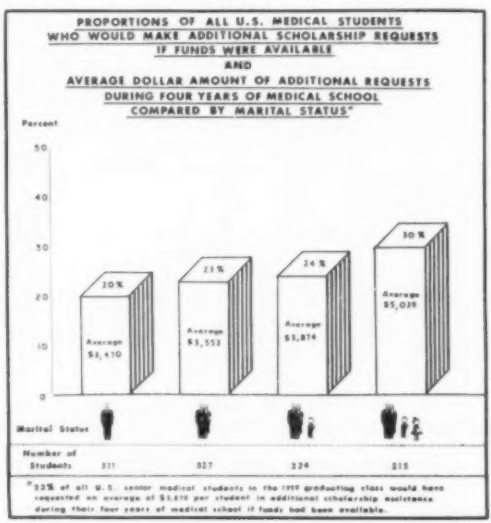

CHART 22.

would ask for additional scholarship assistance. These facts are true for each of the various marital status groups.

Finally, a basic question which is relevant to any discussion of financial aid to medical students is that of the balance between loans and scholarships as methods of financial assistance to students.

In order to shed some light on this question of balance between loans and scholarships from the students' point of view, the students' answers to four questions were studied:

1. What is the median dollar amount of *scholarship* aid actually received by the students?

2. What is the median dollar amount of additional *scholarship* aid which would be requested if more scholarship funds were available?

3. What is the median dollar amount of *loan* assistance actually received by the students?

4. How much additional *loan* assistance would be requested if more loan funds were available?

An integration of the answers to the above questions provided some very interesting findings, which are presented in Chart 23.

First, the students essentially recommended by their answers a 50-50 division between loans and scholarships as a basis for financial aid. Thus, present loan funds received, added to further

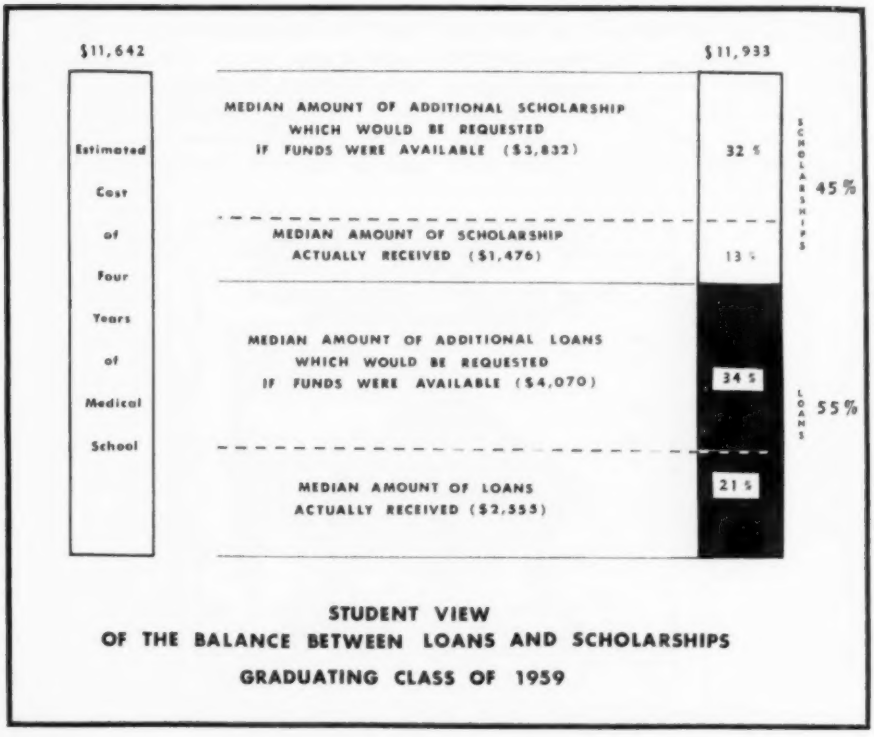
$11,642
$11,933
Estimated Cost of Four Years of Medical School
MEDIAN AMOUNT OF ADDITIONAL SCHOLARSHIP WHICH WOULD BE REQUESTED IF FUNDS WERE AVAILABLE ($3,832)
32 %
MEDIAN AMOUNT OF SCHOLARSHIP ACTUALLY RECEIVED ($1,476)
13 %
SCHOLARSHIPS
45 %
MEDIAN AMOUNT OF ADDITIONAL LOANS WHICH WOULD BE REQUESTED IF FUNDS WERE AVAILABLE ($4,070)
34 %
MEDIAN AMOUNT OF LOANS ACTUALLY RECEIVED ($2,555)
21 %
LOANS
55 %
STUDENT VIEW
OF THE BALANCE BETWEEN LOANS AND SCHOLARSHIPS
GRADUATING CLASS OF 1959

CHART 23.

requests which would be made if additional loan funds were available, account for 55 per cent of the help needed to defray the cost of 4 years of medical education. Similarly, present scholarship funds added to requests which would be made if additional scholarship funds were available account for 45 per cent of the help needed to defray the cost of a medical education.

Second, the realism and fairness of the student's point of view can perhaps be best illustrated by the extreme case. Suppose that a capable student has absolutely no sources of funds available to him other than loans and scholarships. That is, he has no parents or relatives to provide gifts or loans; he has no wife to work and help him meet the costs of his medical education; and he could not work himself at all without endangering his scholastic standing. The student's view would seem to indicate that such a student could still provide for himself and bear a fair share of responsibility for his education within the terms of Chart 23 by mortgaging his future earnings to the extent of half his costs of medical education while society, which will receive benefits from his medical practice, would provide for half his costs through the medium of scholarships.

Thus, between the hypothetical extreme case cited above, and the current actual situation where the student and his family are bearing more than 80 per cent of his costs of medical education, there is sufficient room to cover every individual circumstance that may arise.

c) *Research fellowships.*—A third method of providing financial assistance

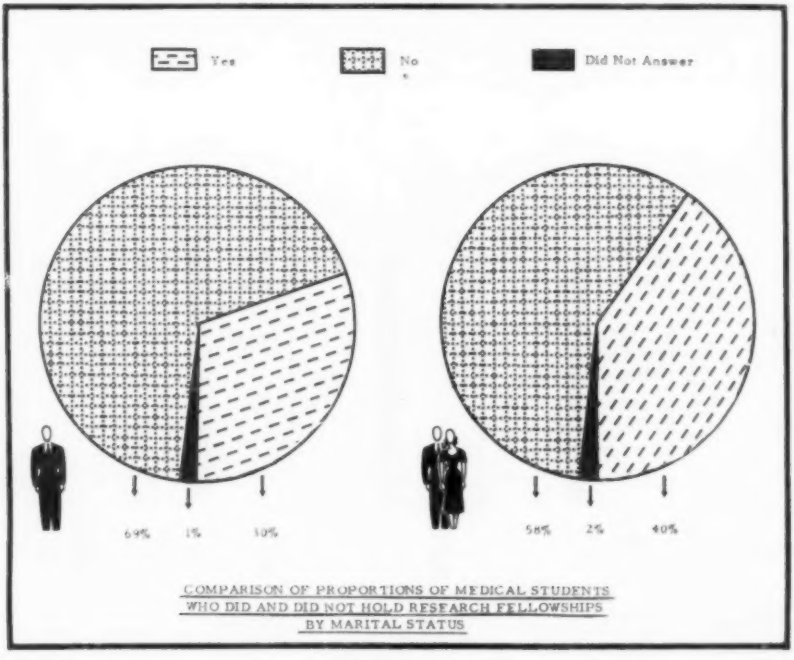

CHART 24.

and incentive to capable medical students is the awarding of research fellowships. These fellowships combine a stipend with the opportunity to participate in the scientific aspect of medicine and, as such, constitute one of the best means of accomplishing the twin goals of broadening and deepening the student's educational experience at the same time that his financial burden is being lightened.

Analysis of the data shows that there is a direct relationship between marital status and various dimensions of the research fellowship.

Chart 24 indicates that there is a significantly greater proportion of married students (40 per cent) in the 1959 graduating class who held research fellowships than is the case with single students in this class (30 per cent).

Chart 25 shows that the student with greater family responsibilities holds his research fellowship for a slightly longer period of time and hence earns a larger

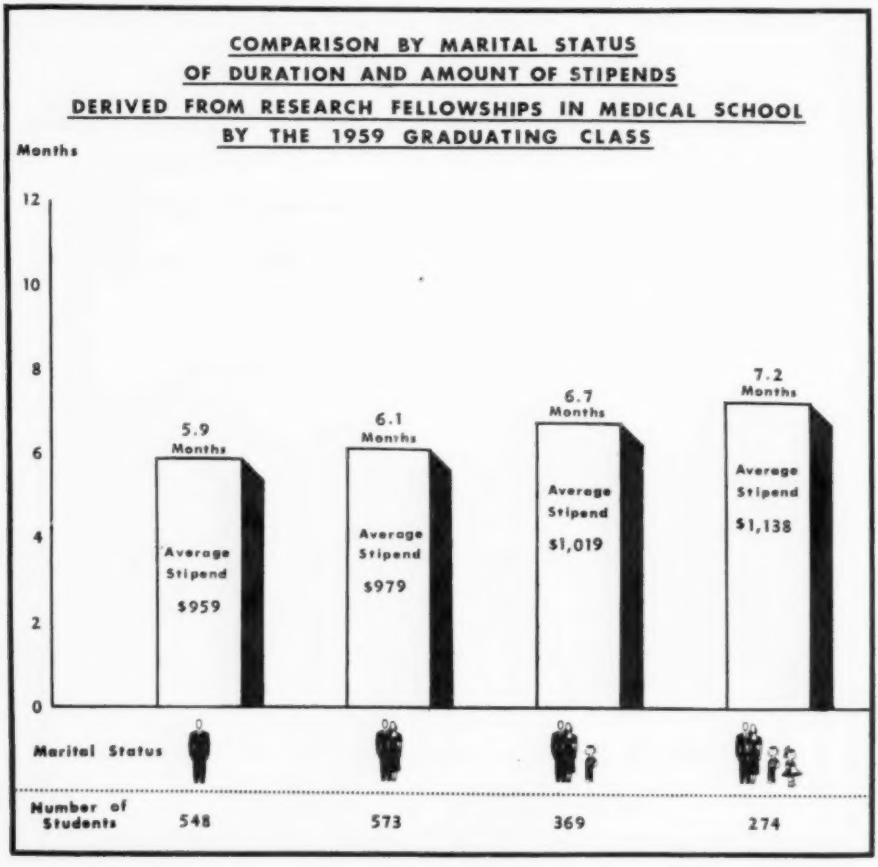

CHART 25.

stipend than does the student with lesser family responsibilities.

SUMMARY

The present article provides an extensive discussion of the financial situation of the American medical student as of June, 1959. In the years to come, as both public and private agencies move to meet the problems inherent in the medical students' financial situation, it is hoped that this article can serve as a point of reference against which the financial situations of future American medical students can be measured.

The discussion in the article focuses on three basic components of the student's financial situation: (*a*) the costs of attending medical school, (*b*) the sources of funds available to students to defray medical school costs (particular reference was made to scholarships, i.e., nonrefundable grants, loan assistance, and to medical student employment), and (*c*) the medical students' perceptions of their own financial problems.

The data on the factors noted here were organized around two central themes: (*a*) a brief comparison of the financial situation, as between the American arts and science graduate student and the American medical student, and (*b*) a comparison of the medical students who bear various amounts of familial responsibility, i.e., those who are single, those who are married, and those who are parents.

The data in this article are based on an analysis of 4,899 questionnaires received from the 6,827 members of the 1959 graduating class.

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Quality of Patient Care—Measurable or Immeasurable*

ROBERT S. MYERS, M.D., F.A.C.S.†
American College of Surgeons, Chicago, Illinois

I have two firm convictions about the quality of patient care. The first is that it is definitely measurable; the second, it is rarely measured adequately in most of the hospitals in this country, including the famous medical school hospitals represented by the distinguished medical educators in this audience.

These statements are not made lightly nor without evidence to support them. They arise from the considerable experience of the American College of Surgeons with its previous Program of Hospital Standardization and the latter's successor, the Program of Accreditation of Hospitals; with the Tissue Committee concept which was inaugurated and developed by the College; and with the Medical Audit Program, established by the College after 7 years of intensive research. Each of these activities has given the College a unique opportunity to observe at first hand the clinical practices of the medical staffs of hospitals of all types, locations, and sizes. These observations lead to the inescapable conclusion that most hospitals would speedily be bankrupt if their financial affairs were conducted in as disorganized and ineffective manner as are the evaluations of care given to their patients.

This does not mean, of course, that physicians are not interested in evaluating the results of their treatment of patients, since the literature abounds with accounts of the treatment of disease and the reasons for the success or failure of such treatment. What it does mean is that methods for routine and adequate evaluation of the performance of physicians have lagged far behind other scientific achievements, with the result that the medical profession in the past has not been able to evaluate care upon a valid, scientific, and practicable basis.

A method is now available, however, to accomplish this necessary activity. It is the Medical Audit Method, developed by the American College of Surgeons and conducted through the Commission on Professional and Hospital Activities.[1] Its value has been demonstrated since 1953, when it was first devised and tested thoroughly in a pilot group of hospitals. Since 1957, it has been available generally to hospitals and is now in regular and continuous use by 28 hospitals located in nine different states in this country. By this method, a hospital can now obtain a valid account of its treatment of patients and, of even greater importance, can compare its treatment of specific diseases with that given for the same diseases in like hospitals.

Before describing the College's Medical Audit Method, it is desirable first to define a medical audit. This is quite simple: A medical audit is the evaluation by physicians of the quality of patient care, as revealed by the medical

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† Executive Assistant Director, American College of Surgeons.

Tables 1-5 and Charts 1 and 2 are reprinted by permission of *Surgery, Gynecology & Obstetrics*.

[1] Ann Arbor, Michigan. The Commission is a nonprofit organization, sponsored by the American College of Physicians, the American College of Surgeons, the American Hospital Association, and the Southwestern Michigan Hospital Council.

records, in order that four questions may be answered: (*a*) What did the patient have? (*b*) What was done for him? (*c*) Was the treatment optimum? (*d*) If not, why not? The answers obtained, when collected, tabulated, and analyzed, provided a means of evaluating the care of a single patient or of groups of patients and afford a method of documenting the performance of doctors, individually or collectively.

The College's Medical Audit Method, which can be done by the medical staff of any hospital, is based upon the following principles:

1. The medical staff must have an adequate statistical picture of its practice in order that it may select critical areas of care for definitive evaluation. These statistics are provided through case abstracts of all patients treated within the hospital. These case abstracts are done by the medical records department, at an average time of 5 minutes per clinical record. The abstracts are sent to the Commission's headquarters in Ann Arbor, Michigan, where they are machine-processed and the results returned to the hospital in the form of indexes arranged four ways: by disease, by physician, by operation, and by surgeon.

2. A limited number of cases should be selected for audit during any one period, in order that the time and energies of the staff may not be dissipated. In the College's method, this does not exceed 10 per cent of the total patients discharged from the hospital.

3. Valid criteria must be established to permit the intelligent evaluation of the three significant phases of patient care: (*a*) hospitalization, (*b*) investigation, and (*c*) treatment. This is of the utmost importance, since, even in our most distinguished medical school hospitals, there is a deplorable habit of using certain illogical, antiquated, and unscientific criteria for measuring certain aspects of the quality of care. Among these are:

a) The use of the terms "Improved," "Recovered," "Cured," or "Unimproved" to denote a patient's condition on discharge. Such terms are meaningless, for the condition on discharge is based upon an impression of the status of a convalescent patient, and insufficient time has elapsed to permit evaluation of his treatment and condition. It is not known whether he is "recovered" or "improved" or "unimproved" at the time of discharge. Moreover, few patients seem to leave a hospital "unimproved." This could be a tribute to the care given by the medical profession and our hospitals, but is probably chargeable to the vagaries of human nature. It is more popular to have an "improved" patient. Actually, a patient leaves a hospital in one of two ways, alive or dead. Any other classification is sheer whimsy.

b) We speak of a rate of 1 per cent as the upper limit of justified postoperative infection and then are gratified that we have no infections, or very few at most, to report. It is true that modern medical science has means of preventing or reducing infection, but infections still occur after operation. With the use of antibiotics, justified in some cases and indiscriminantly used in many others, combined with the use of early ambulation, the patient now leaves the hospital early and may well develop his wound infection at home. Such infections are rarely reported back to the hospital record.

c) We point with pride to a net death rate of less than 4 per cent and to a postoperative death rate of less than 1 per cent. However, we obtain a meaningless net death rate by dividing all deaths over 48 hours by the total number of discharges. Why 48 hours? Why not 12 hours, or why not all deaths occurring

after the patient is admitted to the hospital? We delude ourselves with a 1 per cent postoperative death rate, for this is obtained by dividing all deaths within 10 days of operation by the total number of operations. It makes little sense to divide deaths following operations for brain tumors and abdominal malignancies by dental extractions, hemorrhoidectomies, and other operations from which the patient should recover. Moreover, why limit postoperative death to 10 days following operation? Medical science has advanced to the stage where life may now be prolonged for long periods after admission, or operation, and all deaths should be evaluated in any statistical method. Furthermore, deaths should be calculated in relation to a specific disease or operation. To do less is to foster rates which are no index of adequate patient care.

d) We have claimed that less than 10–15 per cent normal tissue removal means adequate surgical performance and have disregarded the evident fact that clinical indications for surgery, and not the tissue diagnosis made by the pathologist, justifies the surgery. Moreover, we now have figures which indicate that the percentage of normal tissue removal varies widely for justified surgery according to the organ removed. Thus, the number of normal appendices removed justifiably in such conditions as ruptured ovarian follicle, mesenteric adenitis, and regional ileitis, where the differential diagnoses cannot be made with certainty, will be much higher than in the case of the gall bladder, since x-ray technics have brought a high degree of diagnostic accuracy in this condition. The truth is that a 10–15 per cent normal tissue rate for all tissue removed at operation is not an accurate rate or a reliable index of the quality of surgery. We must re-evaluate surgical performance and place the emphasis on the percentage of justified surgery as determined for each case by the medical staff.

4. The review of each clinical record must be rapid and efficient, yet orderly and thorough; and the burden upon the physician must be minimal. A standard *medical audit check* sheet provides for these aims.

5. The use of modern business machines to process the data is essential to facilitate the presentation of resultant information to physicians and hospitals.

6. Comparison between hospitals of data concerning patient care of identical conditions enables the profession to determine the reasons for variations in the treatment of disease.

7. The aim of the medical audit must be the improvement of the quality of patient care. It should not be regarded as a device to punish doctors.

To illustrate the type of information obtainable from the College's Medicat Audit Method, let me show you one small segment of a routine medical audit of inguinal herniorrhaphy done in 1958 by the medical staffs of 24 community hospitals participating in the College's Medical Audit Program. Each of these 24 hospitals is accredited by the Joint Commission on Accreditation of Hospitals; nine of this group are approved for internship by the American Medical Association or for graduate training in surgery by the Conference Committees in Graduate Training in Surgery. In short, this group of hospitals is above average in its attempts to observe high standards of patient care.

This particular study shows the misuse of antibacterials in connection with the operation of inguinal herniorrhaphy, which was done on consecutive patients with both simple and complicated inguinal hernias in patients submitted to operation during the year 1957.

It is well known that simple or uncom-

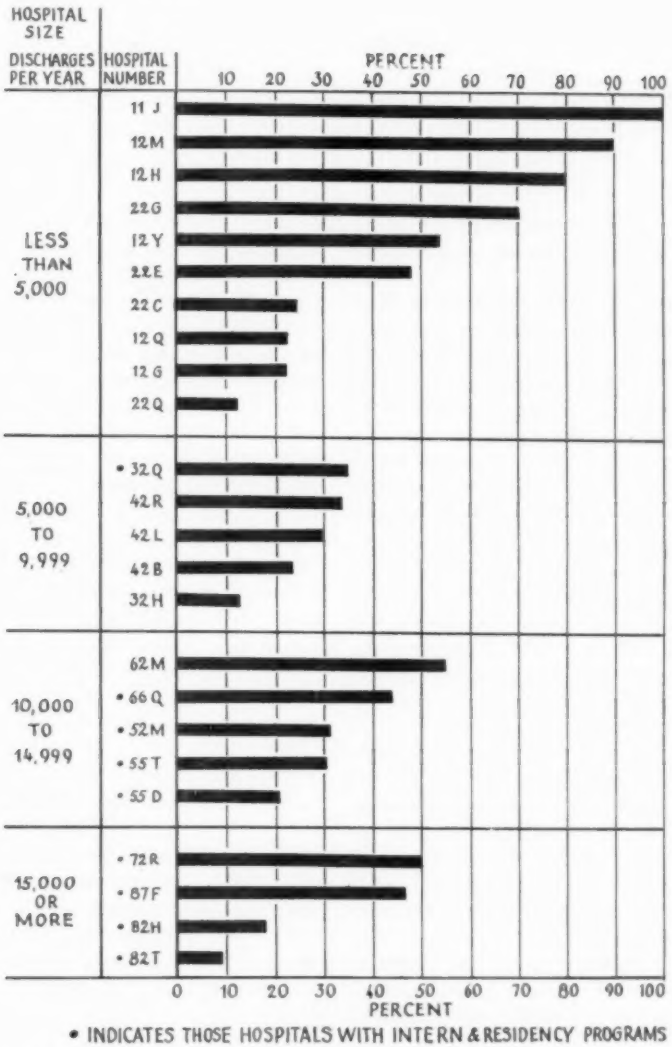

CHART 1.—Per cent of inguinal herniorrhaphy patients given antibacterials. By hospitals.

plicated inguinal hernia is one condition which should not be complicated by infection after herniorrhaphy, if the patients are properly selected and prepared for operation and if adequate surgical asepsis is observed during operation. Therefore, there is no need for antibacterials to be given routinely for prevention of infection following herniorrhaphy. Consequently, the indiscriminant

TABLE 1

USE OF ANTIBACTERIALS ACCORDING TO DIAGNOSIS

ANTIBACTERIALS	SIMPLE No.	SIMPLE Per cent	COMPLICATED No.	COMPLICATED Per cent	Total
With	569	38.2	24	52.2	593
Without	921	61.8	22	47.8	943
Total:	1490	100.0	46	100.0	1536

use of these dangerous drugs is one indication of the quality of care of such patients.

Chart 1 shows the percentage of these 1,536 inguinal herniorrhaphy patients given antibacterials in each of the 24 hospitals. For purposes of comparison, the hospitals are grouped according to size. From this figure it is obvious that there is wide variation between hospitals in the use of antibacterials as part of the treatment of patients submitted to inguinal herniorrhaphy; the range extends from 100 to 9.2 per cent of the patients undergoing surgery. It is also apparent that the larger hospitals, and those with intern and residency training programs, do not, as a group, differ significantly from individual smaller hospitals in the precentage of patients who receive antibacterials. This observation is of considerable interest, for all too frequently the assumption is proclaimed that "larger teaching centers" practice a better brand of medicine by virtue of size, superiority of professional staff qualifications, and the presence of graduate training programs.

Table 1 shows "when" the antibacterials were used in these 1,536 inguinal herniorrhaphies. One fact is significant: 38.2 per cent of all patients with simple inguinal hernias submitted to surgical repair received antibacterials at some time during hospitalization. As it is not probable that such a large percentage of these patients would have a proved infection which required treatment with drugs, the supposition may be made that many of these patients received antibacterials for prophylactic purposes. It is also of interest that only 52.2 per cent of patients with complicated inguinal hernias, those with incarceration or strangulation of intestine or other abdominal contents, received antibacterials. The complicated hernias are a group in which contamination and infection are frequent and in which prophylactic use might be justified in a high percentage of cases. Yet the difference in percentage of use in these two groups of this series is not marked.

Table 2 shows "why" the antibacterials were used in this series. It is immediately apparent that our supposition concerning prophylactic use of the antibacterials was correct in that 84 per cent of the patients with simple hernias received these drugs for that purpose; this figure is almost identical with the percentage receiving antibacterials (83

TABLE 2

PATIENTS WITH ANTIBACTERIALS, ACCORDING TO DIAGNOSIS AND REASON FOR ANTIBACTERIAL USE

REASON	SIMPLE No.	SIMPLE Per cent	COMPLICATED No.	COMPLICATED Per cent	TOTAL No.	TOTAL Per cent
Prophylactic	476	84	20	83	496	84
To control infection	84	15	3	13	87	15
Both	9	1	1	4	10	1
Total:	569	100	24	100	593	100

TABLE 3

ANTIBACTERIALS GIVEN ACCORDING TO DIAGNOSIS

ANTIBACTERIALS	SIMPLE		COMPLICATED	
	No.	Per cent	No.	Per cent
Penicillin	453	79.6	21	87.5
Streptomycin	255	44.8	12	50.0
Chloromycetin	21	3.7	1	4.2
Tetracyclines	143	25.1	5	20.8
Sulfonamides	25	4.4	2	8.3
Other	15	2.6	1	4.2
Total patients	569	*	24	*

* These columns will not total 100 per cent because of multiple use of antibacterials.

per cent) in complicated hernias in which the possibility of infection is greater.

Table 3 lists "what" antibacterials were used in the treatment of these patients undergoing inguinal herniorrhaphy. Penicillin, streptomycin, and the tetracyclines were overwhelming favorites, and all other antibacterials were used infrequently. Yet the recent literature indicates that the majority of the strains of staphylococci now encountered in hospital cross infections in the United States are resistant to penicillin, streptomycin, and the tetracyclines, and these drugs would not be expected to be of therapeutic value in infections caused by those bacteria.

Table 4 shows the combination of antibacterials used. That streptomycin was used almost entirely in combination with

TABLE 4

ANTIBACTERIALS USED IN 593 PATIENTS

DRUG	ALONE	COMBINATION WITH ONE OTHER DRUG				
		Strepto-mycin	Chloro-mycetin	Tetracy-clines	Sulfona-mides	Other
Penicillin	197	204	3	16	7	1
Streptomycin	1	–	2		1	
Chloromycetin	7	2	–	2		
Tetracyclines	85		2	–	1	3
Sulfonamides	10	1		1	–	1
Other	5			3	1	–
Penicillin and streptomycin	204	–	4	33	4	1

943 patients received no antibacterials.
Five patients received other multiple combinations.

TABLE 5

REVIEWERS' CRITICISM OF ANTIBACTERICAL USAGE, AND NUMBER OF POSTOPERATIVE INFECTIONS OCCURRING, ACCORDING TO REASON FOR ANTIBACTERIALS

REASONS FOR ANTIBACTERIALS	TOTAL NO. OF CASES	REVIEWER'S CRITICISM OF USAGE OF ANTIBACTERIALS				POSTOPERATIVE INFECTIONS OCCURRING	
		Too little given	Too much given	Given inappropriately	Improperly withheld	No.	Per cent
None given	943	0	0	0	2	12	1.3
Prophylactic	496	1	3	72 (15 per cent)	0	20	4.0
To control infection	87	0	4	5	0	45	51.7
Both prophylactic and control	10	0	0	0	0	6	60.0
Total:	1536	1	7	77	2	83	5.4

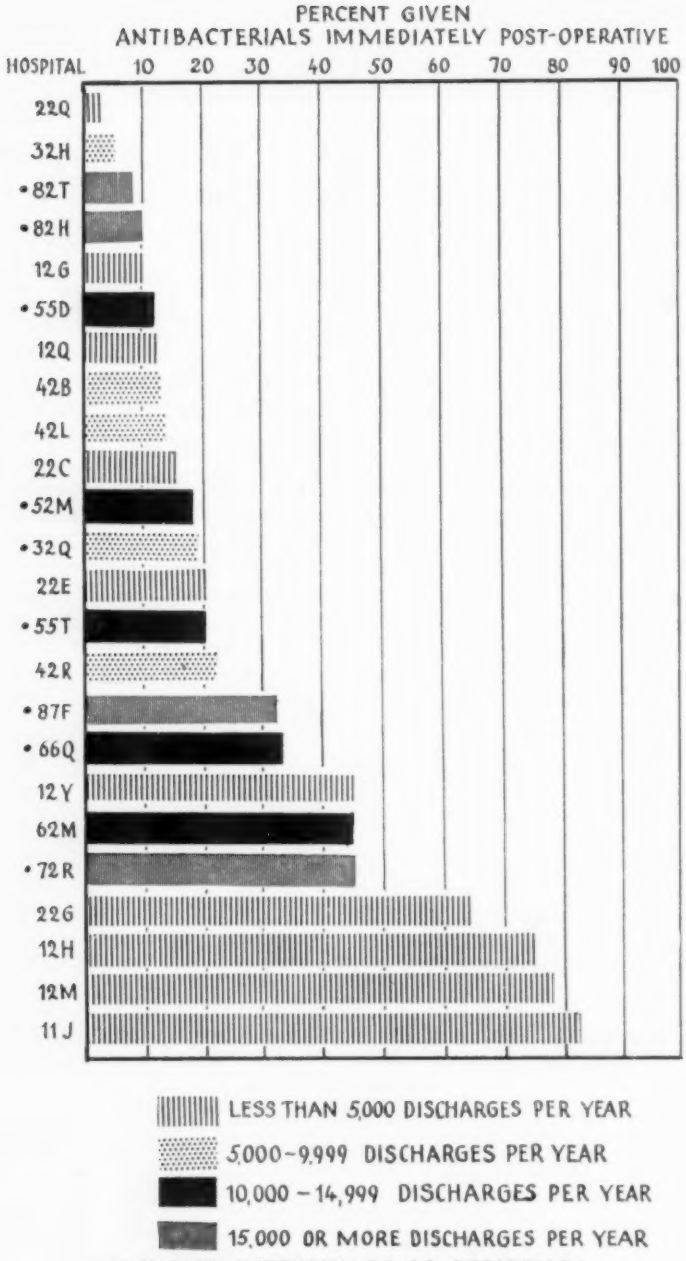

CHART 2.—Unnecessary antibacterial use among uncomplicated inguinal hernia patients. By Hospital.

penicillin is probably due to the availability of this combination commerically for parenteral administration.

Table 5 presents two significant facts: The first is that the physicians who evaluated these patients undergoing inguinal herniorrhaphy believed that 72, or 15 per cent, of the 496 patients receiving antibacterials prophylactically should not have been given these drugs for this purpose. Although this percentage of criticism of prophylactic use is considerably less than will be shown to be indicated, the very fact that these physicians were willing to criticize the care given by their colleagues is an indication that physicians will evaluate critically the care given by other physicians if a practicable mechanism such as the College's Medical Audit method is available. In passing, note should also be made that in only two cases were the antibacterials judged to have been indicated but withheld.

The second fact of importance in Table 5 is that there were 3 times as many postoperative infections, either local wound or of other sites, in the group receiving antibacterials as there were in the group not receiving these drugs. The reasons for this are not apparent; perhaps it may have been due to a greater number of poor risk patients in the group receiving prophylactic antibacterials; but, on the other hand, it is possible that those surgeons using prophylactic antibacterials were not as careful of their aseptic surgical techniques and relied too heavily on the antibacterials.

Chart 2 presents my rating of these 24 hospitals based on the frequency with which antibacterials were used unnecessarily for prophylaxis in each hospital. These statistics for prophylactic use differ from the opinions of the reviewing physicians as presented in Table 5, and were obtained as follows: the 596 patients with simple inguinal hernias receiving antibacterials were analyzed to find out when the initial dose of antibacterial was given to each patient. Those receiving antibacterials preoperatively were judged to have received the drugs justifiably to eradicate a preoperative infection, although it is admitted that a certain percentage of such patients might have received preoperative antibacterials as a prophylactic measure. Those receiving antibacterials after evidence of postoperative infection had occurred were likewise classed as justifiable. The group receiving antibacterials for the first time as an immediate postoperative order, on the other hand, were judged as receiving the drugs prophylactically and, hence, unnecessarily. A comparison of the number in this category with the total number of patients operated upon for simple inguinal hernias in each hospital gave an arbitrary rating which indicates in a descending order of excellence the misuse of antibacterials by hospitals. It is evident that a small hospital with less than 5,000 discharges per year received the highest rating for using antibacterials the most intelligently. The ratings of the "teaching centers" are apparent.

CONCLUSIONS

1. Few hospitals, including our most distinguished teaching centers, perform an adequate and scientific evaluation of the quality of patient care given to their patients.

2. The small hospitals claim that they are not capable of doing an adequate evaluation; the great teaching centers say they do not need it, as they have clinical pathological conferences, grand rounds, x-ray conferences, departmental meetings, and many other teaching exercises.

3. The fact is, C.P.C.'s, grand rounds,

and other conferences, valuable as they may be, are teaching exercises based upon one or two cases, and, as such, do not evaluate the quality of care given to patients generally in the hospital. This is particularly true of the great majority of patients whose diseases are not spectacular and whose hospital stay is unmarked by unusual complications.

4. Experience shows that inadequate clinical practices exist in the great teaching hospitals as well as in the smaller hospitals. The medical staffs of both are not aware of this, because they do not perform regular, valid, and informative evaluations of the quality of care given to patients in their hospitals.

5. The medical school hospitals should take the lead in conducting adequate medical audits not only to assure the highest standards of patient care but also to provide standards against which other hospitals can compare the excellence of their work. This has been a field too long neglected by the medical educators.

Art plus Science in Patient Care*

HUGH H. HUSSEY, M.D.†
Georgetown University School of Medicine
Washington, D. C.

When Dr. Caseley invited me to give this talk, he was kind enough to indicate what its scope should be. He wrote as follows:

This presentation is intended to treat the age-old, yet fundamental, subject of personal qualities of Medicine versus its increasingly complex scientific preoccupation. It would be hoped that this paper would help not only to identify those major characteristics in both areas, but to delineate ways and means by which the personal side of patient care in the medical school teaching hospital may be enhanced without any coincidental sacrifice of the constantly increasing advantages of the sciences of which Medicine is comprised.

Dr. Caseley also thoughtfully supplied the title—"Art plus Science in Patient Care." I accepted that title because, at the very outset, I should like to challenge the possible inference that art and science are separate or separable where patient care is concerned. Chart 1 is a "droodle" by Roger Price. He called it "Nude Searching for Collar Button" or "Croquet Wicket for Siamese Twins." I use it whenever I want to make the point that two elements—in this instance, "art and science"—are firmly bound together.

In order to do as little work as possible, I wrote letters to four physicians —my family doctor, an eminent general practitioner, a chairman of the department of medicine in a medical school, and a member of the AMA Board of Trustees—asking what "the art of medicine" means to them, and promising not to quote them. All of them except my family physician replied, and I am greatly indebted to them for many of the thoughts to be presented here.

Dr. Julian P. Price wrote initially as follows: "What is meant by 'the art of Medicine'? At the moment I am unable to put this into words. You may quote me. After thinking about it for three or four days, I will send you further confusing thoughts." Later he did so, in these sentences: "The science of medicine gives a physician a knowledge with which to deal with problems of health and disease. The art of medicine gives a physician the wisdom to apply this knowledge to an individual or to a group so as to achieve optimum results."

ART VS. SCIENCE

With these simple definitions in mind, let's reconsider my contention that art and science are inseparable in patient care. The Krebs cycle (Chart 2) is an example of medical knowledge—science, if you will. In one sense it is a form of art in itself. The scientist capable of elaborating this form—and of moving from it to new forms—is indeed an artist. However, this artistry is foreign to that part of the clinical setting called patient care. There it cannot stand alone. It can provide tools that are applicable to patient care, but then, immediately, the "art of medicine" comes into play. And if that care is to be optimal, it will be highly personalized.

* An address delivered at the annual meeting of the Teaching Hospital Section of the Association of American Medical Colleges, Hollywood, Florida, October 29, 1960.

† Dean and Professor of Medicine.

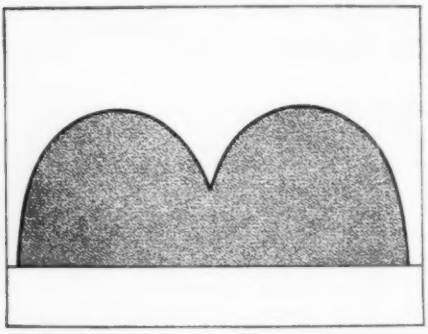

CHART 1.—Roger Price's "droodle"—"Nude Searching for Collar Button"—used to signify that art and science are firmly bound together.

The art of medicine is a way of using the tools of science, and something more. I shall return to the "something more" later. For the moment, it should be clear that the art cannot stand alone. It must be based upon science. When a physician disregards or departs from the substance of his science and tries to make do with the "something more," his work degenerates from artistry to artfulness.

VARIATIONS IN ART

Art is evident in many fields of endeavor. In each field, variations are to be found—variations that are temporal and personal. A temporal example is seen in the comparison of paintings of the early Egyptians with those of Botticelli (Fig. 1). Behind Botticelli were the years of experience of other artists. At hand were tools and materials that the earliest artists could only dream of. A personal variation is evident in the paintings of contemporary artists (Fig. 2). This relates to their interests, their intellect, their genius, and these in turn will influence their use of tools and materials.

These same variations are to be found in the art of medicine. The one that has immediate interest is the personal one. What can be done in the Medical School Hospital to insure that everyone concerned with patient care will bring to the highest possible level, the art that derives from his individual capacities?

Before that question is answered, one other fact must be brought to mind. In medicine as in painting, the artist's work is directed toward someone else. The work is an action, and in the someone else there is reaction. The work is highly personal; so too is the reaction. I like Norman Rockwell; I abhor Grandma Moses. This same interpersonal variation must be reckoned with in patients.

THREATS TO THE ART OF MEDICINE

The previous speakers in this morning's program have discussed the excellence of application of scientific knowledge in the Medical School Hospital and have told how, at times, that very excellence may tend to promote various discomforts for patients, thereby constituting an impediment to the art. On this score I have only a few points to make.

First, (pause)[1] waiting can be uncomfortable, and for a sick person it can be one of the hardest things to endure. In a Medical School Hospital the very depth and extent of scientific studies provide an unusual number of chances for such discomfort.

Second, it has been noted that the patient in a Medical School Hospital is often studied and cared for by a multitude of physicians having varying interests in his problem. Under these circumstances, he is likely to be confused and may fail to identify or identify *with* any of the doctors. Figure 3 is offered as proof that this need not be the case. This cartoon was drawn by a patient who was studied for a very complicated renal-metabolic disorder at Georgetown University Hospital. Not only did he clearly identify the various investigators,

[1] At this point the speaker paused long enough that the audience, in fact, became uncomfortable.

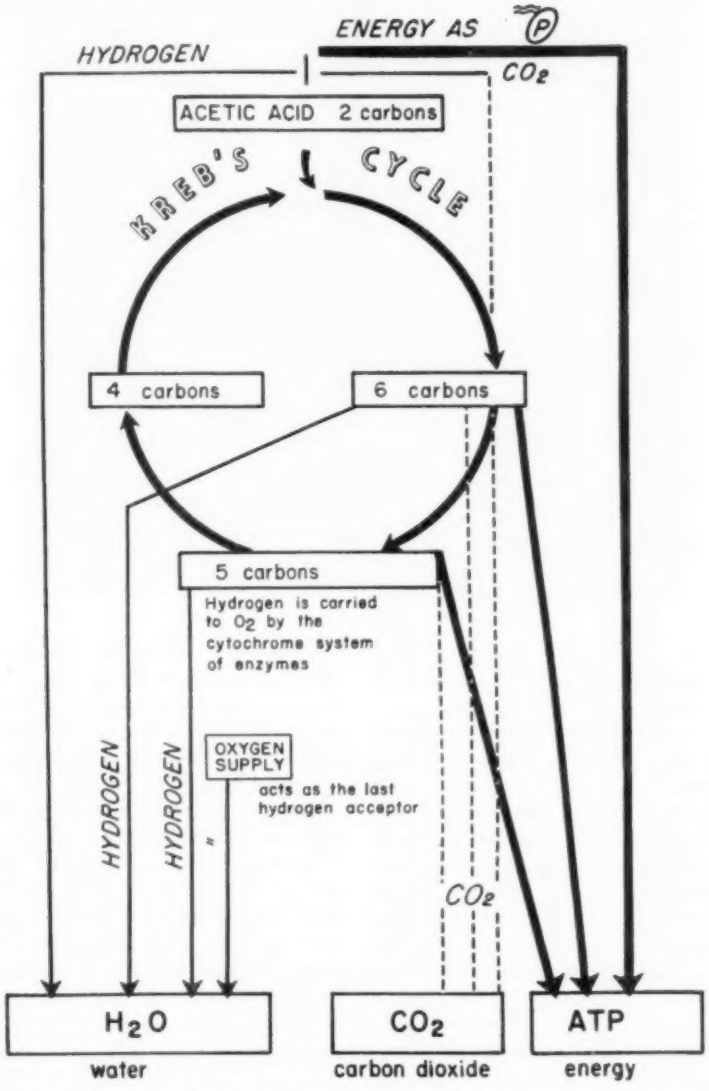

CHART 2.—The Krebs cycle—an example of science, which cannot stand alone in patient care.

but it is evident that they were quite successful in their communications with him, so that he understood what they were up to. Whether he identified *with* one or more of them is problematical, although I suspect he had warm feelings for the sinister-looking character who obviously was the director of the whole

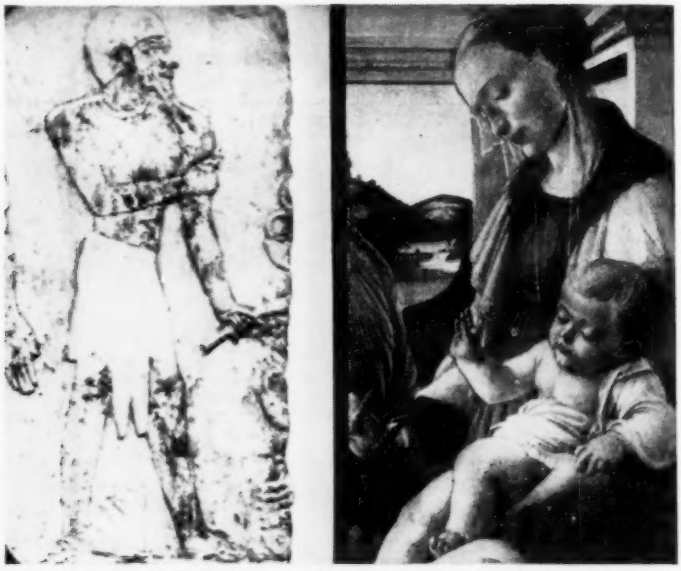

FIG. 1.—Early Egyptian mural contrasted with painting by Botticelli—a variation in art for temporal reasons.

proceedings. Surely it can be concluded that the patient considered that his medical care was highly personalized.

Third, the full-time status of physicians in the Medical School Hospital tends sometimes to create an attitude of indifference to the totality of a patient's problem. It's like the story of the man who married one of twins. They lived in the same house. When a friend asked the man how he could tell them apart, he replied, "That's their problem." So it is that the physician may dwell upon only those aspects of the problem that are of special interest to him. Other aspects—"That's 'their' problem"—the "their" being vague in everyone's mind.

Fourth—a corollary really—is the threat of indecisiveness. It's like the umpire (a small man) who was working behind the plate when Bill Dickey was catching and Rudy York was batting—both large and muscular young men. On the first pitch, the umpire called, "Strike one," and York glared at him. On the second pitch, the call was, "Ball one," and Dickey glowered and muttered. The third pitch was a tricky one, and the umpire quietly said "Two." York and Dickey swung around together and demanded threateningly, "Two what?" "Too close to tell," replied the little umpire as he dusted the plate. Thus, the full-time physicians, narrowing down on their areas of specific interest, may believe that final decisions are in someone else's province. The result: repeated indecisiveness.

THE ART OF MEDICINE

Earlier I have hinted, now I emphasize that the art of medicine in the Medical School Hospital is *not* for physicians only. It must be brought as close to perfection as possible for all levels of personnel. Of course, this is true for all hospitals, but the complexities of

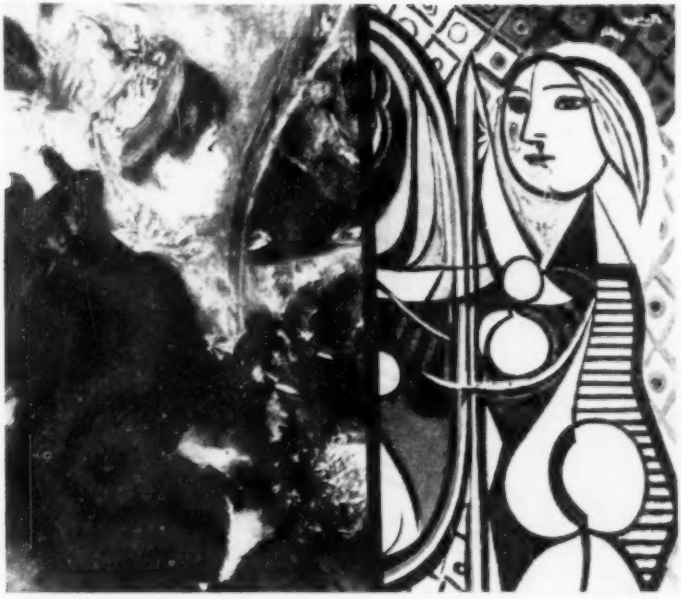

FIG. 2.—Renoir and Picasso, contemporary artists whose work contrasted for personal reasons.

structure and activities of the Medical School Hospital, already alluded to, complicate the problem.

Perfection of the art will come only if there is a well planned program for continuing education of all the people who work in the hospital. Like any program in medical education, the one directed to perfecting the art can be partly didactic, partly clinical or "bedside," and partly by good example.

Broadly, perfection of the art derives from education in two categories—the scientific and the nonscientific or not-strictly-scientific. The latter category has many elements. There are the "personal touches" that result from training in manners and from the development of sympathy and understanding—*full* understanding of the patient as a person. There must be training in techniques of communication with patients, from the simplest device, such as an explanation for a delay, to the highly complex business of informing the patient about his illness. For success in this, the physician especially must first gain an appreciation of the intellectual and emotional barriers that are set in his way. Then he must give full play to his imagination, and he must be made to practice. It is as important for the trainee-physician to learn how to explain things to patients as it is for him to learn how to write good progress notes or make a good case presentation at staff rounds. The educational program should create an awareness of what it costs to be sick—costs in emotional and physical suffering for the patient and family as well as in dollars. An awareness of the financial has overtones of civic responsibility.

As far as the category of things scientific is concerned, the watchword for perfection in the art is *discrimination*.

FIG. 3.—A patient's representation of what went on during his examination at a university hospital.

The great artists in medicine are the ones who choose the right tests and the right treatments. Sometimes their choices seem intuitive, but they are not. They are made discriminatingly on the basis of knowledge and experience. The educational program must insure that techniques of discrimination are exemplified to the fullest.

If you are going to remember only one thing of all I have said, remember this: Perfection of the art of medicine in the Medical School Hospital will not just happen. It requires a carefully planned educational program that is just as sustained and regular in its performance as the undergraduate teaching of biochemistry. It requires continuous self-evaluation by retrospection. Otherwise there is likelihood of changes in attitude —changes that destroy the art—changes that develop in a manner as subtle as the changes in the face you see in the mirror every day. Have you recently looked at the picture in your high school year book?

The Teaching Hospital's Dependence on the Community*

GEORGE G. READER, M.D.†
Cornell University Medical College, New York, New York

When Jesus Christ was asked the question, "Who is my neighbor?" he responded with the parable of the Good Samaritan. The question before the symposium, "What is the teaching hospital's community?" is in some respects similar. Rather than answering it with a parable, however, it seems more appropriate here to attempt a systematic analysis of the variables in hospital-community relationships.

A hospital's community is the people it serves, which may include many and diverse groups. Each of these groups, or sub-communities, comprises those to whom the hospital looks for guidance as to how successful it is in carrying out its functions. The definition of the hospital's community, then, may vary in a number of ways depending on the diversity of the groups to which it refers itself; it must at times serve many masters.

The purpose of the hospital in itself may determine its community to a large extent. For instance, the veterans' hospital must concern itself primarily with service to veterans; the state mental hospital, with service to the neurotic and psychotic members of society; the city hospital, to the medically indigent.

Sources of financial support, likewise, may define the hospital's community. The hospital supported by insurance fees will necessarily differ in outlook from the hospital dependent on local government, or the endowed or voluntary institution, or one that derives its main income from the fees of private patients.

Consumers of the hospital's product are also a main determinant of the hospital's community. Patients are ordinarily considered to be the main consumers, but the staff itself may be a consumer of teaching and research opportunities that the hospital affords; or it may be that the chief product of the hospital is research findings, and the consumers of this product are, besides other scientists, all people everywhere.

As is true of other enterprises, the most successful hospital is the one that best fulfills the needs of those it is attempting to serve. If it has a product to sell for which there is a limited market, it must create markets to survive; on the other hand, if it is not supplying products which are in demand, other producers may be expected to preempt the field. In terms of the consumer groups with whom the hospital deals, what then are the needs that determine the availability of various markets?

Broadly, there are local community and larger regional or national needs. The local community requires medical care services for its welfare patients and for the indigent. In many places, too, problems such as drug addiction and alcoholism must be dealt with through special accommodations, and more and more facilities are needed everywhere for the chronically ill and aged. Labor unions, both locally and nationally, are seeking high-quality hospital care for their members. Members of insurance plans are looking constantly for the best medical

* Delivered at Association of Teaching Hospitals, Miami Beach, October 29, 1960.
† Professor of Medicine.

care for the premium dollar. And the average citizen is hoping that, when he or a member of his family becomes ill, he will get skillful and considerate care.

The national community has a somewhat different set of needs. There is a general shortage, for instance, of diagnostic and treatment centers and of institutions prepared to pioneer in various research and therapeutic areas. The nation has a more or less imperative need for trained personnel to serve in the armed forces and in governmental posts in various parts of the country. And there is a rapidly growing demand for physicians and other health workers with a broad view, who can take advisory and administrative positions in medical care organizations, governmental and private, to help with planning and policy-making for the improvement of patient care.

Hospitals themselves, of course, have needs that must be met. They require clinical material for study, hence for patients who may require only selective specialized services as well as for those who need more complete care. A resident training program in ophthalmology or gynecology is dependent on patients with particular lesions for training house officers in operative technique and in diagnosis and management of relatively unusual conditions. Large numbers of patients must be screened to find those exhibiting such lesions; there simply are not enough such patients in the population served regularly. It is impracticable to send each of these patients for a complete diagnostic examination in the General Medical Clinic; some require only treatment of the particular lesion. On the other hand, to train internists and pediatricians in complete care of patients there must be a group of patients who are examined completely and followed for a period of time for health maintenance as well as for diagnosis and management of illness. The ideal solution of the problem of selectivity versus comprehensiveness is not yet at hand, but both are needs of the teaching hospital.

As epidemiological studies of chronic illness assume more importance, the hospital may also need a population group in which to study the natural history of disease. Chronic illnesses, unlike acute disease states, require long-term follow-up for proper comprehension. Many disease processes like atherosclerosis, the endocrinopathies, and even cancer take years to run their course. In order to understand the natural history of an illness and to be able to determine the effects of therapy in modifying it, patients must be kept under close surveillance for long periods of time. This is most easily accomplished if the patient is a member of a group that regularly receives all its medical care from a particular hospital. Genetic and environmental studies are then possible, too; these cannot as readily be carried out where each member of a family has to be tracked down, or if the patient's environment is beyond the ken of the hospital staff. A population laboratory may also be particularly important in developing improved methods of care and in providing opportunities for interns and residents to learn about them. If young physicians are to become excellent family doctors, they must have an opportunity to practice as such under competent supervision.

Along with financial support, every hospital needs adequate personnel so that its staff members will have time to think and plan for the best use of its resources in carrying out its functions. A teaching hospital cannot get along with busy practicing physicians directing its destiny today. Further than that, it needs a planning group of clinicians and administrators who are not so preoccupied with everyday matters that they cannot cor-

rect defects and prepare for a more effective and satisfying future.

Hospitals might be classified as having either a national or a local orientation. The hospital with a national orientation will measure itself against other university teaching hospitals or against the medical academic world in general to determine its standard of performance. Its most cherished values are the quality of its research, the kind of training it offers, and the prestige of its staff. Patients' needs may be subordinated at times in such a hospital. It is almost inevitable that patients who are serving as research subjects will sometimes find their comfort and their desires sacrificed to the experiment. Every effort is made to protect them from harm —there is no question about that; but the attention of those who care for them will necessarily be on the objective observations to be made rather than on the subjective responses of the patient. Most clinical investigators can't afford to be empathic; most specialists are not really interested in specialties other than their own.

The locally oriented hospital, on the other hand, has as its reference groups local physicians, local citizens, the patients, and community agencies. Its values must first be service to patients, service to the profession, and service to the community. Research may be considered a luxury, and actually as an interference with other goals.

Service, teaching, and research are the main functions of the teaching hospital, but the balance among the three may be seen to be determined by several combinations of variables depending on the orientation of the hospital and the communities it attempts to serve. Most teaching hospitals have both local and national orientations and attempt to provide as much service to their consumers as possible. Choices must be made, however. In a democracy people eventually get what they demand, and there is increasing evidence that the American consumer is becoming more aware of his medical needs and more articulate about demanding service for them. The teaching hospital occupies a sensitive position and must make its choices with particular care, because, if it does not, unwelcome decisions may be imposed upon it. There must be realization that it cannot depend upon local support if local needs aren't met, in the same way that it cannot count on national support if its research and training fall below the highest standard.

Each teaching hospital should consciously be aware of its various communities and plan to serve them in the most effective way possible. A first step is to list current assets in facilities and personnel. Then the hospital should determine the needs it is prepared to meet with these resources, or resources yet to be developed. The purpose of the hospital should be stated and a long-range plan developed to fulfill it. At the same time the hospital should be adaptable and should make a continuous effort to find out what the changing needs of its communities are. If the choice is made to emphasize service, then income can be expected to be derived from patient care; but if the decision is to face toward the larger national community and concentrate on research and teaching, then funds for support must be derived from endowment and from research grants. The hospital that tries to emphasize research and teaching when its main sources of income are from patients' fees is making a serious error. All hospitals, however, should aspire to be teaching hospitals to the extent of their abilities, just as all should strive to meet the service needs of their communities.

There are many hospitals that have been signally successful in reconciling

their roles on the national scene and on the local. Two examples will suffice: Montefiore Hospital in New York has pioneered in meeting local needs in care of the chronically ill and in its Home Care Program and has enhanced its scientific reputation at the same time in traditional fields of investigation. Michael Reese in Chicago has achieved the same kind of success in psychiatric service and in slum clearance, while maintaining and advancing its reputation as a center for training and research. These hospitals, like the parable of the Good Samaritan, say to all of us "Go and do thou likewise."

Community Relations of University Teaching Hospitals: The Organization of Medical Practice*

GEORGE BAEHR, M.D.
Mount Sinai Hospital, New York City, New York

The theme of this paper was stated recently by President Stirling of Stanford University:

> To have vitality and force a University must be responsive not only to change in the realm of man's knowledge, but to changes also in the total social scheme off the campus.

Reflecting the identical point of view on behalf of the lay public, Frank Stanton, President of CBS,[1] urged at the same occasion that medical education relate some of its teaching and research to new problems created by the changing social order in the community outside the medical school.

Atomic scientists and theoretical mathematicians concern themselves with the political implications and practical application of their advancing knowledge to the world outside their institutions. Yet the Chairman of the Department of Medicine in most of our medical schools is often a recluse who holds that his contribution to medical education is fulfilled by cramming the maximum number of scientific and clinical facts into the heads of his students. He is content to let them graduate equipped with thousands of pieces of the jigsaw puzzle which is current medical knowledge and the hope that they will learn to put them together in some semblance of order during their intern and residency years, or later in life. Being protected from the world about them, few Deans or Professors of Medicine appreciate the degree to which the overwhelming increase in medical knowledge, which, to their minds, justifies their educational concentration upon the medical sciences is at the same time creating increasing disorder in medical practice.

This growing disorder is the result of five related factors:

1. The splintering of the profession into an ever increasing number of specialties and super-specialties.
2. The coincidental decline in the numbers and the professional status of family physicians.
3. The spread of health insurance so that virtually everyone except a small residue of destitute families will soon be private patients of individual private physicians.
4. The absence of supervision, controls, or standards in the solo practice of medicine.
5. The rising cost of medical care due in part to the lack of organization of private medical services which can bring together the numerous splinters of medicine, establish orderly collaboration between them and promote efficient controls, standards, and economies in medical practice.

It is not generally recognized that 88 per cent of all private medical services is rendered by physicians to patients out-

* Presented at the 1960 Annual Meeting of the Association of American Medical Colleges, October 29, 1960, Hollywood Beach, Florida.

[1] Address of Dr. Frank Stanton at the dedication ceremonies of the Stanford University Medical Center, September 18, 1959.

side of a hospital.[2] The 12 per cent rendered in hospitals is usually performed under excellent controls and supervision and in accordance with recognized professional standards. This is the brand of coordinated in-hospital medical practice to which medical students, interns, and hospital residents are exposed, but it represents only a small fraction (less than one-eighth) of all community medical care. Upon completing their hospital training, young physicians are released into the world to engage in a very different kind of unorganized solo practice, a relic of the individualistic days of a previous century.

As a rule, patients do not know the nature of the illness for which they seek medical attention, and most cannot judge the competence of their doctor to cope with it. It has been demonstrated that the 88 per cent of practice which occurs outside of a hospital can be conducted more efficiently and at much less cost if organized as group practice subject to controls, supervision, and professional standards comparable to those of an accredited hospital.

It is the fashion to weep over the declining numbers of family doctors and their declining social status in this era of specialization. Yet most of our best medical schools continue to glorify the specialist. They emulate the great American clinics which concentrate exclusively upon the specialties of medicine and surgery and upon the training of physicians for practice in the splinter specialties. Many university clinics and other nonuniversity aggregations of specialists have evinced little or no interest in routine family medical care throughout the community or in family doctors, except as a profitable referral source of "clinical material." Even those schools which endeavor to train undergraduates for family practice release them on graduation and a brief internship to function as solo practitioners without giving them any practical experience concerning how to practice as integrated members of an organized medical group.

A few schools expose third- or fourth-year students to a limited program of so-called "Comprehensive Medicine," but the proponents of these programs would be the first to admit that they are not comparable to a broad experience with organized comprehensive group practice.

It has been my good fortune, during the past 14 years, to have participated in the establishment of 32 medical groups in New York City and adjacent areas, each of which includes from eight to 30 family physicians and a full roster of qualified specialists representing all the major branches of medicine, surgery, the laboratory sciences, roentgenology, and radiation medicine. These 32 independent medical groups provide comprehensive medical care on a completely prepaid basis to more than 600,000 persons who are members of about 200,000 families enrolled in the Health Insurance Plan of Greater New York.[3] Their standards of practice are governed by a Medical Control Board, most of whom are members of medical school faculties, and their work is supervised by the medical department of HIP under the full-time direction of the former Chairman of the Department of Medicine of Cornell Medical School.

It is a privilege to be able to report to you that, under this system of group practice, the professional status and financial rewards of the 550 family physi-

[2] Recorded experience of the Health Insurance Plan of Greater New York.

[3] HIP is now paying almost $20,000,000 a year to its medical group on a capitation basis for the comprehensive medical care of this insured population. The medical groups are independent partnerships, and each distributes its net income to its members on a salary basis, together with retirement and other benefits.

cians in these 32 medical groups is comparable to that of the specialists. Since they are in constant contact with the specialists and the laboratories of their medical group, whose services are freely available to them and their patients without any extra charges, their professional work is kept abreast of the times and their continuing medical education is fostered. Many of the family doctors are Board-qualified internists. Many have become Board diplomates after joining their group, since the limitations in the scope of their daily professional work as family physicians is identical with that of an internist.

In this age of specialization, can medical schools continue to ignore the crying need of our time for better organization of medical practice? Some medical schools in New York and Boston send sections of the third- or fourth-year class on field visits to our medical groups. Some assign one or two families attending the university clinic to each fourth-year student so that he may make home visits and learn to appreciate the medical needs of a family unit. This is called "instruction in comprehensive medical care." However, it is by no means equivalent to giving students, residents, and post-residents some actual experience in working as a member of an organized medical group responsible for the total medical needs of families of various economic levels.

County medical societies, being essentially trade associations to protect the economic interests of the solo practitioners who comprise the majority of their membership, can be expected to voice opposition to the establishment by medical faculties of organized medical groups, even though they are intended to teach potential family physicians and specialists how to practice in groups to their mutual advantage and with benefit to the community. Should our medical schools continue to permit themselves to be intimidated by such opposition?

My proposal is that medical schools begin with their student health service. A comprehensive health service provided by full-time members of the medical school faculty for the student body of a university in return for annual per capita payments is a good beginning. This can be extended then to include comprehensive medical services on a prepaid basis for members of the faculty and employees of the University and their families. In the average university, this would bring membership in the program to 10,000 or more persons and the income (excluding Blue Cross premiums to meet the costs of hospitalization) to upward of $400,000 or $500,000 a year. This estimate of annual income is a minimum. It would increase as the services are made available to nonuniversity residents of the area on a fee-for-service or on an annual subscription basis, as in the Palo Alto Clinic at Stanford.

Assuming that half the time of most members of the faculty who participate in the program must be devoted to teaching and research, twenty to 25 physicians on half-time will be required to staff a medical group serving 10,000 persons, of whom half will be family internists and pediatricians. After deducting 40 per cent from the gross income to defray the expenses of operating the medical group center, the participating physicians may expect an average *net* income of from $10,000 to $12,000 a year for half-time clinical practice as a supplement to their salaries from the university.

These figures indicate the feasibility of the project. However, my object in proposing the establishment of group practice affiliated with medical schools is not to lay emphasis upon financial or other materialistic considerations.

Teaching hospitals of medical schools must become more responsive to changes in the total social scheme. There is an urgent need for them to relate some of their teaching and research to correcting that disorganization of private medical practice which has been created in our time by advances in the medical sciences and by the changing social order in the community outside the school. This can best be done by demonstration and experiment. The time is long overdue.

The Effects of Teaching and Research on the Teaching Hospital's Economy as Viewed by Hospital Administration*

GEORGE BUGBEE†
Health Information Foundation, New York, New York

The mutual values of medical school and teaching hospital are too fundamental to need reiteration. Every progressive hospital would welcome the opportunity of assuming the responsibilities of medical school affiliations. The universality of this appeal is a measure not only of the status of the teaching hospital but the constructive contribution of such affiliation to quality care. However, this discussion is not concerned with an inventory of these values but rather with an examination of the medical school's effect on the teaching hospital's *economy*. Of necessity this is a narrow view with measures stated in dollars and cents; and dollar-and-cents values for education, research, or patient care are admittedly limited or inadequate indexes of value. They are, nonetheless, a vital province of administration.

The objectives of the medical school and teaching hospital are so similar and so interwoven that efforts to divide costs could be dismissed as unrealistic. However, the multiplicity of income sources for education, research, and patient care make the division of costs mandatory and at the same time more complicated. With most patients paying for their care independently and through various forms of insurance, and with a variety of government agencies paying for those unable to meet this cost from their own resources, there is an insistent demand that hospital rates reflect patient care costs. In the same way, public and private funds for the support of medical education and research come to the university clearly earmarked in terms of purpose and intent.

The division of expenses is a problem for medical schools as well as teaching hospitals. The definitive report on medical education countrywide, entitled *Medical Schools of the United States at Mid-Century*, published in 1953, had this paragraph on the subject:

"It has generally been assumed that the cost of patient care in teaching hospitals is considerably higher than in nonteaching institutions. The director of one large privately owned hospital stated that he estimated the cost in the teaching hospital to be 25 per cent higher than that in a nonteaching institution. However, when he attempted to review the figures available on the costs in other hospitals in the same city, he was forced to admit that the cost in the teaching hospital was exceeded by some other private hospitals. In another instance, an able hospital administrator stated that he felt certain that the cost in his teaching hospital must be higher than in other hospitals. However, his statistics showed that the costs in the teaching hospitals were only slightly above the median figures for other hospitals in the state.

* Presented at the meeting of the Medical School-Teaching Hospital Section of the Association of American Medical Colleges, October 30, Diplomat Hotel, Hollywood Beach, Florida.

† President, Health Information Foundation.

The information on this problem seems to be so inadequate and confused that it certainly deserves further study. The impression gained in the Survey was that the teaching hospital costs were no higher, and in some instances were lower, than those in private hospitals offering a quality of medical care similar to that of the teaching hospital."

The inexperienced individual approaching the problem of clarifying the economy of teaching hospital and medical school presumes that cost accounting will, if pursued with vigor, readily sort out the costs of patient care, education, and research. In my opinion such optimism is misplaced. These functions are so interrelated as to defy an unassailably accurate division of costs. This is not a reflection on cost accounting, but rather an outgrowth of the fact that maintaining good patient care requires an integration of teaching and research just as the education of physicians can only be accomplished by participation in good patient care.

As President Lee A. DuBridge of the California Institute of Technology noted recently in his "Basic Research and the Private University": "I do not know how to determine at Caltech how many pennies of each dollar go to teaching and how many to research. This is not because our bookkeeping department is inefficient, but only because we purposely mix the two activities so thoroughly that separate budgeting is impossible even in principle."

Other evidence of this vital supportive interrelationship of education, research, and patient care may be cited. Robert K. Merton, Professor of Sociology at Columbia University, in an article on "The Search for Professional Status,"[1] describes some of the common attributes of a profession. He points out that professions have been granted autonomy by the public because of the expertness of the service they render, and then says: "Ultimately, this expertness comes only from research, education, and disciplined experience. That is why the professions attach much importance to research and education. This is not a matter of vogue, even though 'research' has become a vogue word. Research is quintessential to the professions."

Professor Merton does not consider education and research a one-time experience of the professional but rather a life-long requirement, if expertness is to be maintained. This immediately raises the question of how education and research are to be maintained as vital forces in practice throughout a career. Certainly the need is recognized. Large groups of physicians, working in organized settings, endeavor to maintain their expertness by participating in continuous education and research. As we look at the large nonaffiliated hospitals of this country, we see evidence of this drive in their extensive research and teaching programs. This is the fundamental reason for presuming that almost any hospital would welcome affiliation with a medical school.

The importance of education and research to the maintenance of professional tone may be the best justification for avoiding small hospitals. By tone, we certainly include the drive toward continuing acquisition of scientific knowledge and its optimum application in patient care throughout an entire medical career. The opportunity for such incentives is almost always lacking in the small institution.

Where there is no institutional setting or no hospital affiliation for the physician, the drive for professional tone is even further diminished. It is interesting to speculate about the ultimate

[1] R. K. Merton, "The Search for Professional Status: Sources, Costs, and Consequences." *American Journal of Nursing*, 60: 662-64, 1960.

effect of the separation of general practitioner from care of hospitalized patients in Great Britain. That nation has a long history of a movement toward such separation, but the pattern was frozen by the terms of the British National Health Service. It would seem that, if the hospital is the setting which best facilitates continuing participation in education and research, the results of separating general practitioners will be consequential, particularly in its long-run effect on quality of care.

It is also fair to wonder whether the rather arbitrary fashion in which we have set patient care as the hospital's primary function—with education and research incidental, desirable, but merely possible adjunct functions—is not short-sighted. If the larger hospital has higher costs because its very size permits a degree of education and research, that may be the best investment for society and those paying for hospital care on a day-to-day basis. The relationship may be one of positive cause and result bearing directly on the satisfactory accomplishment of the aims of any administration.

While it is true that education, research, and patient care are vitally interrelated and while it seems equally true that cost accounting cannot separate one function from another, we are nevertheless constrained to separate them arbitrarily. The need stems from the variety of sources of support which demand such separation by teaching hospital and medical school administration. Granted the difficulty of separating costs for patient care, it seems essential to know how such costs differ in these types of hospitals, and this is what I have endeavored to determine.

The American Hospital Association solicits information from all hospitals each year in regard to rates charged patients, particularly for specific aspects of service such as a two-bed room and a few common surgical and diagnostic procedures. The inquiry has continued for about 12 years, providing benchmark information on changes in hospital charges to the public. As part of the study there has from the first been a request to reporting hospitals phrased as follows: "What is your hospital's latest per diem cost as computed under the Government Reimbursible Cost Formula (Department of H.E.W. 1956)?"

The 1959 edition shows that the questionnaire was sent to 4,651 nonfederal short-term general member hospitals, with a 67 per cent return from 3,105 hospitals; 2,207 of these hospitals reported a reimbursible cost on a per diem basis.

Table 1 from the 1959 report shows average per diem costs by size of hospital for the 2,207 hospitals:

TABLE 1

PER DIEM COSTS AND SIZE OF HOSPITAL

Classification by size of hospital	Hospitals reporting	Average
Under 25 beds	109	$20.75
25– 49 beds	450	21.18
50– 99 beds	564	22.42
100–199 beds	535	24.65
200–299 beds	278	26.62
300–499 beds	205	27.02
500 beds and over	66	26.39

A marked increase in per diem costs is apparent as size of hospital increases, but these costs become reasonably stable for hospitals with more than 200 beds. The fact that large hospitals tend to be in urban areas where personnel and other costs are generally higher may be an influence on per diem costs. There are probably other explanations, and I venture to suggest two which bear on our subject today.

First, it is certainly possible and probable that the larger hospital has a greater cost component of education and research in view of the importance of these functions in maintaining the tone of professional care.

My second surmise would be that, as

TABLE 2

AVERAGE PER DIEM COSTS FOR 241 HOSPITALS

	Type A	Type B	Type C	Nonteaching	Total
Cost per diem	$29.34	$27.48	$29.02	$26.37	$27.10
Number reporting	35	30	15	161	241

hospitals gain in size and in number of personnel, communication becomes much more difficult and time-consuming. As a result, the effectiveness of an hour of personnel time is substantially reduced. This latter point has pertinence to the teaching hospital in view of the numbers of students and research workers who increase the total number of people at work. Communication is at its most difficult in the teaching hospital, and the effectiveness of an hour of personnel time may be depreciated as a result.

McNerney, Trussell, Roswell and others have found a direct progression of per diem cost with increased bed capacity. It has been popular to explain this correlation by assuming that the range of services is much more complete in the larger hospitals. In view of the low average census inevitable in the small hospital and, conversely, the opportunity to spread the cost of additional facilities over more patients in the large hospital, it has always seemed to me to be unlikely that the whole increase can be ascribed to more comprehensive services.

Through the courtesy of the American Hospital Association, I was able to secure individual data for 241 hospitals with over 300 beds reporting a per diem cost. These are short-term general hospitals that are members of the Association. I have omitted city and county unaffiliated hospitals, because many are organized for long-term care—though this did not significantly affect the average cost for the whole group.

The reported reimbursible per diem cost for these 241 hospitals was combined with the statistical information submitted by each hospital for listing in the Guide Issue of *Hospitals*. The Guide Issue gives opportunity for each hospital to indicate medical school affiliation, though the degree of affiliation is not indicated. Therefore, from a different listing the 241 hospitals were classified into four groups: (*a*) university-operated or -owned hospitals; (*b*) affiliation of a primary character; (*c*) "hospitals used to a limited extent in the school's medical teaching program"; and (*d*) hospitals without affiliation. Per diem cost and service data were then analyzed for these categories.

Average per diem costs for all 241 hospitals is $27.10 (Table 2). Averages ranged from a low of $26.37 for the nonaffiliated hospital to a figure of $29.34 for the university-operated hospital. The excess of cost is $2.97 for this highest cost group, or about 10 per cent more than for the nonaffiliated hospitals.

Costs for the 241 hospitals were also averaged by size (Table 3). Difference in size, however, does not explain difference in cost for the teaching and nonteaching hospital, since there is no signi-

TABLE 3

COSTS FOR 241 HOSPITALS AVERAGED BY SIZE

	300-400 beds	400-500 beds	500 or over beds	Total
Cost per diem	$27.3	$17.2	$26.9	$27.1
Number reporting	134	50	57	241

Average cost per diem = $27.1.

TABLE 4

	Teaching			Nonteaching	Total
	Type A	Type B	Type C		
Av. number of facilities	17.9	17.5	15.6	15.8	16.3
Number of hospitals reporting	35	30	15	161	241

ficant variation in per diem costs among size classifications of over 300 beds.

Facilities are listed by each reporting hospital for the Guide Issue published by the American Hospital Association. As you know, this is an effort to record the range of facilities and to indicate the extent of service. The facilities include not only such common departments as pharmacy or delivery room, but various types of X-ray departments and even radioactive isotope laboratories.

The 241 hospitals averaged 16.3 facilities (Table 4); the nonteaching hospitals, 15.8; and the university-owned or -operating teaching hospital, 17.9.

Average number of facilities by size of hospital (Table 5) shows that hospitals of over 500 beds have a few more, an average 17.5, than do hospitals with 300-400 beds, averaging 15.8 facilities.

The analysis of these figures was not too productive. They show some slight excess of per diem cost for the primary teaching hospitals which is not solely a coefficient of size of the hospital. This may be accounted for by added cost of education and research, or even by the more expensive complexities of the teaching hospital or by more complete services. In fact, teaching hospital costs may have been held at this level by the demands and pressure of purchasers of care. However, under any circumstances it is not a particularly significant difference. My main assumption that the difference would be small, if not proved, seems very close to the truth.

However, it seems certain that the economy of the hospital with a primary medical school affiliation is very much affected. The variable sources of funds for each function require a separation of costs. Further, great stringency of funds for either medical school or hospital can create pressures to shift the division of expenses. Since the demand for greater expenditures by either will almost always exceed income under the best of circumstances, the need for arbitrary division means an uneasy balance for both.

The 1953 report, *Medical Schools of the United States at Mid-Century*, had no better solution to offer than the following recommendation: "Certain broad policy decisions should be reached as to what costs should be charged to hospital care and what to medical school instruction, as a guide to determining the costs to the medical school of in-patient and out-patient service in teaching hospitals."

Having admitted that the economy of the teaching hospital is affected by its special function, I wish I could offer simple guidelines for a division of ex-

TABLE 5

Average Number of Facilities and Size of Hospital

	300-400 beds	400-500 beds	500 or over beds	Total
Av. number of facilities	15.8	16.2	17.5	16.3
Number reporting	134	50	57	241

penses. Dr. Albert W. Snoke, director of the Grace-New Haven Community Hospital in New Haven, Connecticut, has studied this subject at length, and formulated principles for his own hospital. But he seems still to be searching for more precise terms for such a division. In one of these documents he suggested the following guidelines:

a. Relative essentiality to medical school and hospital.

b. Identifiable additional expense that can be allocated directly to the medical school or the hospital because of extra teaching, research or service loads.

c. Assumption by each partner of as much of the cost as possible that can relieve the other of expense in this indefinite area between service and teaching.

I come to the conclusion that there is no simple method of avoiding the possibility of economic controversy between the teaching hospital and medical school. Considering the multiple and often inadequate sources of income for medical school and hospital, such controversy is bound to occur. Whereas the figures which I have analyzed on per diem costs are not definitive, they indicate that teaching hospitals, as a whole have been successful in meeting one of the major determinants in the search for patient income—namely, that costs of patient care be more or less comparable with the rates paid for comparable service in nonteaching hospitals. This appears a vital economic guideline if the hospital is to have income from patients.

However, the maintenance of such reasonable costs by a teaching hospital by no means solves the financing of medical schools which, by and large, have had more than their share of problems in securing revenue. Rather, it is the practicality of securing adequate support from many sources which I believe must determine the division of costs between the two units in any given setting. Reasonable hospital costs are one such insurance of income.

The importance of the highest quality of patient care, research, and education are such common objectives of the medical school and the teaching hospital that by choice none can be sacrificed at the expense of any other. Indeed, the importance of these objectives to the public generally is so great that all sources of income must be pursued with energy, and efforts must be made toward a practical division of costs which will insure the maintenance of present sources of funds and encourage greater support.

Teaching and Research Costs in the Teaching Hospital's Economy—A Consumer View*

JEROME POLLACK†
Social Security Department, United Automobile, Aircraft, and Agricultural Implement Workers of America

In just a few years most general hospital care in America has come to be purchased by a new consumer in a profoundly new way. This year, as much as 60 per cent of all private expenditures for hospital care will be paid not by the patients but by a much larger body of people who are well—including employees, employers, associations, welfare funds and others—who now share the cost of hospital care and purchase it in regular advance payments. By the end of this decade, at least four-fifths of all private hospital care will probably be purchased in this manner. These new consumers are becoming increasingly important to the economy of the hospital. Their understanding and their willingness to support a rising volume, standard, and cost of care are destined to become matters of great importance.

The patients who directly purchase the care, who still pay large amounts, and who have much to say about prepayment do not have a clear image of the teaching hospital. Some may have heard that teaching hospitals provide outstanding care, although most would have difficulty in defining just what a teaching hospital is. Those who suffer from grave or unusual illness may gravitate toward a teaching hospital later or sooner. In large areas, however, there is no ready access to a teaching hospital, and people are understandably unacquainted with it. A lack of regional organization has failed to imprint in the public mind a clear picture of the respective rank and role of hospitals. Architecture and decoration are more in evidence and usually more impressive than an institution's performance on the intern-matching program or the arcane work of the laboratory which is generally out of sight and out of mind. Indeed, an imposing edifice and impressive equipment, even if unjustified, under-employed or unskillfully used, may give greater reassurance to patients and may well be cheaper than the homier virtues of an aging university hospital of highest distinction, struggling to use its space and equipment with honor and ingenuity in the current race with medical progress and the intensifying demands for care.

Those who purchase prepaid hospitalization are removed from the receipt of care and are actually closer to its provision. We are now in the early stages of an eventual professionalizing of the purchase of health care. Relatively new to the field, only a few of the new consumers have begun to know their way in the labyrinth of health care sufficiently to have become aware of whether a hospital has been approved for internship and/or residency by the AMA's Council on Medical Education and Hospitals, whether it is affiliated with a medical

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† Program Consultant.

school, whether it is accredited by the Joint Commission on Accreditation, whether it operates or is associated with a school of nursing, and even such basic characteristics as how its staff is organized, what departments it operates, and what services it performs. This lack of a clear image of hospitals impairs to a regrettable extent the consumers' ability to appraise the care they purchase, for ultimately they make decisions that can crucially influence the course of hospital care.

This deficiency could in part be overcome by the prepayment plans through which the care is purchased. Unfortunately, however, prepayment plans act as if all care were at a single level, at once unassailable and unmentionable. To the typical insurance plan, a hospital is a hospital. Private hospitalization insurance usually fails to make any distinction among hospitals. Dollar limits set for room and board accommodations are at best based on local charges and often fail to meet these. They do not contemplate the need for going to a teaching hospital and the additional cost of care that this may entail. Maximum allowances for therapeutic hospital services, disparagingly called "extras," do not stretch to pay for such costs in more serious conditions that may bring a patient to the teaching hospital. In such plans, the additional charges are borne entirely by the patient.

The hospital-sponsored plans generally pay for the admission and most ancillary services at teaching hospitals. However, such plans, bedeviled by repeated rate increases and growing public recalcitrance, are occasionally resorting to rigid payment ceilings which conceivably could harm the teaching hospital and might someday threaten the participation of the very best hospitals in prepayment. While the consumer is looking twice at cost, he has not singled out the teaching hospital. Rather a generalized tendency to question cost is being unequally transmitted through these ceilings to the teaching hospital, which does stand in some danger of becoming an unintended casualty.

The consumer is appropriately concerned with cost. Even if we acknowledge fully the rising volume, improving standards, and broadening scope of health care, nevertheless, the bill for private health services and supplies will this year exceed $100 for every man, woman, and child. In severe or protracted illness it has reached magnitudes unmanageable without prepayment and not always easy to prepay. Per diem expenses in voluntary short-term hospitals last year exceeded $31 a day. A one-week hospital stay costs the average worker engaged in manufacturing between 2½ and 3 weeks of his total spendable earnings. To the many millions whose wages are tied to the Consumer Price Index, and who thus observe the Index with more than academic interest every time it is issued, hospitalization has the distinction of leading all items that go into the cost of living. They do not know, however, that at that the Index understates the increase in cost, as it contemplates only room rates and omits the greater increases that have occurred in ancillary services. However, the prepayment plan reminds them of rising cost with great regularity. Rate increases have occurred far more frequently and involving far greater magnitudes than any one had anticipated. The consumer who remains uninsured or has lost his coverage faces the awesome prospect of having to pay the whole augmented cost of hospital care at the time of illness.

In this setting, the teaching hospital stands out as a more expensive institution. The Columbia University study of New York Blue Cross Plans, under

the direction of Dr. Ray Trussell, found that hospitals with an approved internship or internship and residency program have higher costs than those without such programs and that those with medical school affiliation have still higher costs. All but three of 90 hospitals with internship and residency programs fell into the two highest quartiles among hospitals classified by median per diem cost—60 of the 90 in the highest quartile. Moreover, a select group of hospitals, with nearly perfect or perfect matching with acceptable applicants for the internships they offered, reported a "very high" median cost of about $35 compared with $24 for general hospitals in New York in 1957. The cost differences between hospitals with internship approval and others lacking such approval were not explainable by differences in facilities and services (nor by size and occupancy). They were found to persist when hospitals with equal facilities and services, but differing in approval status, were compared.

Augmented costs are understandably incurred by the teaching hospital. No purpose is served in masking their existence. These additional costs do not loom large in the total cost of hospital prepayment. However, their existence should neither be exaggerated nor minimized.

By derivation, *consume* means to take up wholly. The consumer, however, does not take up wholly the teaching and research activities of the hospital. He benefits from them: a teaching hospital is probably a preferable place to have even a tonsillectomy, although it may be well not to publicize this in the *Reader's Digest*. However, much of the benefit is intangible and indirect; and the question is appropriately raised whether the patient should pay for the teaching and research activities conducted by a teaching hospital.

As a matter of broad general policy, it has been repeatedly asserted that educational and research activities, which benefit the community as such, should not be imposed on the patient. The Commission on Hospital Care, among others, recommended that arrangements should be established whereby hospitals can receive assistance from local, state, or federal funds for the maintenance of schools of nursing and that basic research activities in hospitals having qualified investigators and adequate facilities should be stimulated through a national research foundation subsidized from tax funds.

There may be considerable difficulty in extricating the costs of teaching and research from that of care. Conceding the difficulty, recognizing the need to develop appropriate criteria, and allowing for some arbitrariness in determining where education ends and service begins, it should be possible to make an approximate separation of the costs of teaching, research, and care. Many problems posing greater difficulty in definition and measurement are routinely solved in medicine, in business, in engineering, and in numerous other fields. The allocation does not have to be made for all time and could be revised on the basis of continuing appraisal and refinement of method. However, this measurement, to a tolerance no worse than customary in such matters, is not beyond our capabilities.

A study of nursing education in 1958 by the Illinois Hospital Association reported an annual net cost of $1,620 per student for student nursing beyond the tuition paid and the value of the services rendered and led to the conclusion that "the hospital nursing school is inadequately and improperly financed." Neither are the costs of intern and residency training, of the education of student dietitians, medical records librar-

ians, and other forms of teaching justifiably dismissed as negligible.

The question then arises—what to do about the ascertainable costs of teaching and research, once identified. The Trussell Report concluded that the cost of education should not be the burden of the sick individual utilizing and, therefore, financing the hospital. However, it asserted that until other community resources are available to meet the expense, the cost must be included as a part of reimbursement. Although some consumers may strive to accept this formulation sympathetically, the attitude may commend itself to them but not the conclusion.

Certainly prepayment should acknowledge and pay for the better service and higher standards of quality associated with the teaching hospital. It could share costs where a clear distinction between education, research, and care cannot be drawn. However, even if prepayment would bear the burden ungrudgingly, the question persists whether it is appropriate or even desirable. It is one thing to live with an imperfect situation—we often adjust intelligently to imperfection—but it may still be unwise to legitimatize a practice that we properly reject. Is it desirable for research to be supported by prepayment rather than by the usual sources of support for research which embody a mechanism for appraising its value, its prospects, and its conduct? Prepayment might make an occasional contribution to research done by qualified investigators. It might advance "seed" money to stimulate needed studies. In addition, it could appropriately support some sorely needed research and education on the subject of prepayment and medical economics.

It is greatly to be hoped that teaching hospitals will participate more fully in prepayment, although this should be done on a scale and in a manner which furthers the ends of education. There are many educational values to be derived from greater participation and closer association with prepayment—the opportunity to train the student to maintain the health of the well and to deal with the health needs of a population; the opportunity in a teaching situation of treating paying patients who expect their dignity to be respected and thus inspire the best lasting attitudes in the physician. In such arrangements, prepayment should pay for service rendered, and the cost should properly contemplate expensive, well qualified care and include remuneration for extra value. However, the financial relationship between prepayment and the teaching institution should not be looked on as a subsidy to education.

Trussell concludes that the university-affiliated teaching hospital needs separate consideration because of the more advanced education of physicians and other personnel; because of the values of the research climate and the availability of equipment for the care of more serious patients; because they offer patients more complete diagnostic and therapeutic services; because they are essential to patients with complicated and serious illness and are, in effect, the last court of human appeal before life is lost. The Report concludes that it is unsound to demand that such hospitals be reimbursed by the same methods and in the same amounts as institutions offering less service.

With these conclusions, the consumer will concur. Although he may be blamed for the ceilings on reimbursement, he has not been the prime mover in their imposition and is not responsible for their imperfections. Prepayment should reconcile itself to paying the appropriate cost of good service. Some plans, however, have adopted crude and restrictive ceilings on payment. When

the Michigan Blue Cross was proposing a payment ceiling, the teaching hospital administrators and some consumers feared that it might harm the better and more comprehensive hospitals. A ceiling which puts each hospital in a Procrustean bed and permits those with lower-than-average cost to stretch their reimbursement even though they may be performing fewer desirable functions, but cuts off anything extending beyond the bed's length, would appear to be a somewhat drastic and ill-advised step. Consideration was urged of a method of payment that, if it could not contemplate the quality of care, would at least give more credit for the broader range of functions performed and for some features associated with quality. However, it is fair to temper this statement with the observation that, unlike some other ceilings, the Michigan formula has not been actually harmful, nor has it kept the teaching hospitals from doing what they might otherwise have done. For the time being, the ceiling appears to have slowed down the rate of increase—although even this is not entirely proved. It might conceivably become harmful in the future, and thus there are grounds for concern. Other ceilings in voluntary health insurance and elsewhere have become rigid, unrealistic, and oppressive. If a good reimbursement procedure is not insisted on, there always is a danger that someone will invent a bad one.

What is at stake is a central premise of prepayment. The consumer wants and indeed has come to press for a quality-oriented system of prepayment. He is becoming aware that it may be unwise to set foot in an institution that does not meet the minimum standards of accreditation. The teaching hospital is colliding with an essentially political decision by prepayment to operate irrespective of quality. Most present plans, as Dr. Paul Hawley has observed: "pay as cheerfully for bad medicine as they do for good." They do not distinguish among purveyors of service according to the quality of service they render. In many instances, for example, no distinction is made between the chiropractor and the doctor of medicine. In most instances, they do not distinguish among doctors of medicine, although the profession itself has developed and accepts some criteria and standards. Even the plans sponsored by hospital associations do not differentiate in their basic dealings between the unaccredited hospital and the best teaching hospital. The lack of concern over quality is a cardinal deficiency in prepayment, and it is understandable that the teaching hospital and those very characteristics that place it at the apex of quality would inescapably encounter this issue. Harrassed by rising cost, a prepayment system uncommitted to the quest for quality is reacting to public pressure and regrettably making the teaching hospital, the institution that epitomizes quality, somewhat vulnerable.

Perhaps it would be ill-advised for consumers to make *cause celebré* of the teaching and research costs that may now be borne by prepayment. In scale, this is not a major matter for consumers who face many larger problems. However, a clear delineation of the problem should be kept alive and efforts made to define better the roles of teaching, research, and service. Most probably the situation should be handled with discretion and restraint. However, if prepayment is causing schools hard-pressed for money to grasp at straws instead of facing up to the need for substantial public financing, then restraint might be quite the wrong thing, for the expenses of education are properly those of the community. The new consumer would be hard put to explain to his constituents why they should give up wages

in buying hospital service benefits for costs that should be met through taxes.

If the hospital's economy now and in the future is to be so closely tied to prepayment, this new method of financing needs far more careful and thoughtful attention. Substantial rate adjustments are being requested with great regularity. Yet the consumer rarely receives an adequate explanation of why he must pay so much more. Hospitals, accustomed to dealing with and drawing their support from an elite public and fearing to give ammunition to possible critics, have not yet learned how to deal with those who now pay most of their operating costs. Many approach the public with a congenital fear. Some go into shock at mere grumbles or "back talk," while failing to accept the public's proper concern over the cost, conduct, and content of prepayment. Any resistance to rate increases is regarded as destructive even when the public may stand ready to pay more but may question the full amount requested.

The consumer is not resisting any and every rate adjustment. When an irresponsible attack on hospitals or their prepayment plan occurs, it is widely publicized. On the other hand, when, on examining the evidence, a technician representing consumers—as have I on many occasions—quitely counsels acceptance of a rate increase (and this is far more usual), it does not reach the newspapers, nor is it even reported to the hospitals. On the contrary, some plans claim credit for having outwitted or outbargained an assumedly hostile public.

Prepayment rates involve many matters of judgment, methods, assumptions and practice over which there can be legitimate differences. Prepayment was intended to increase the utilization of hospitals. If it had not restored occupancy, the hospitals would have failed. But there was no reason to assume that it would stop at the right point. Prepayment has stimulated some faulty utilization which needs to be corrected by direct controls and obviated by broader benefits to reduce the economic incentives for needless hospitalization. The cost of care, the propriety of formulas for paying the hospitals, the impact of bed supply on the cost of prepayment, the amounts allocated for reserves and for operating costs, the content of benefits, the composition of governing boards, and the rights of subscribers all require thoughtful, careful, and competent examination. Most of all, the rate pressures have revealed the unresolved status of Blue Cross. When it acts in its original role as agent for the hospitals, it gets into trouble with the public and is ordered to bargain at "arms' length" with the hospitals on behalf of subscribers. When it attempts to side with the public in advancing strict payment procedures and the like, Blue Cross runs into difficulty with its constituent hospitals.

After much observation, I believe that people are basically willing to pay the increasing amounts necessary to support an advancing standard of care—although the cost of care is creating a serious problem for those with low incomes, those with little assistance from employers to defray the cost and for the uninsured. People who are employed will, in my opinion, pay even more for needed expansions in the scope of prepayment. However, their willingness depends understandably on the assurance that unwarranted elements of cost are being scrupulously resisted and that prepayment is being operated in the interest of the consumers, as well as of the purveyors of health care.

Most thoughtful people have ranked the economics of medicine as subordinate by far to medical practice, research, and education; but the nutrition of these

more important pursuits depends so largely on an adequate and appropriate financial base that medical economics has begun to assume irrepressible prominence.

Only now is medical economics beginning to emerge from a primitive state of development characterized by lack of scientific knowledge, a tendency to rely on doctrine and dogma instead of observation and experimentation, uncritical acceptance of unsupported and untested panaceas, rigidity of thought, and denunciation of innovation. Many of these symptoms correspond to stages of medicine centuries ago. They have long inhibited the development of a prepayment system that embraces the need to insure a broad range of health services from prevention to rehabilitation. Only now is official medical economics emerging from what I have called the "booze and 'baccy" stage which for years rested on the petulant *non sequitur* that, if people spend so much on alcohol and tobacco, they have no right to complain about the cost of medical care. Only now are convincing signs emerging that the earlier efforts to extirpate the closed panel prepayment plans, to outlay salaried practice, and to perform a hysterectomy on the hospital are giving way to a more tolerant attitude. Only now is prepayment, hastily entered into out of political and economic crisis, beginning to take a longer look at its lasting power. Only now are the early fears of prepayment being dispelled and the fiction rejected that a system of financing could simply limit its scope to reimbursement and ignore what I have termed the insurogenic influences that it exerts on whether, when, where, by whom, and even how services are performed—when, in fact, those who exert these influences are practicing medicine almost as certainly as if they performed the services themselves. And only now are the prospects for medical leadership in prepayment beginning to hold forth the promise that necessary progress can be made.

A teaching hospital established the first modern hospital prepayment plan. Hospitals were first to adopt the guiding principles and to establish the plans that for a long time exerted primary leadership in the development of prepayment in America. Now the initiative has fallen into other hands. In the past decade private insurance companies, rather than the prepayment plans formed by hospital associations, forged ahead. Recently, consumers are pressing most actively for change, for more comprehensive protection, and for a better balance of their interests with those of the purveyors of care.

Often fearful of what prepayment may entail and where it may lead, physicians, medical educators, and hospital administrators have not given prepayment the medical guidance it needs. Recent events show that movement will continue to be rapid in this field, even without such guidance. Many crucial decisions involving the organization of health care are now being made around medical clinics and rehabilitation centers not closely associated with teaching institutions and often not even affiliated with general hospitals. Consumers who may be well versed in general economics and even in medical economics are understandably deficient in their knowledge of the requirements of health care.

Still, the consumer's motivations are essentially constructive—even his concern with cost. If he could join with the medical profession in the recognition of the need for a strong working prepayment system valued in its own right and not as a lesser evil, if the great teaching institutions could help collect and purvey accurate knowledge and advance a sound perspective in solving the

financial problems of medicine, not only would the process of prepayment be enormously advanced but the teaching institution itself would be less threatened by the remaining imperfections of a still very primitive stage of prepayment.

The consumer is looking not only for a better method of financing, but also for better care. The hospital, by working toward this mutual goal with the broader public with which it now must deal, can win understanding and agreement—as distinct from mere approval—and achieve an appropriate instrument for financing an even higher standard of hospital care.

Studies on the Reliability and Validity of Objective Examinations

HENRY B. MURPHREE, M.D.*
Division of Basic Health Sciences, Emory University, Atlanta, Georgia

The goals in giving examinations are multiple. The imminence of being tested is, of course, an excellent spur to study. Another reason for examining students is that both the teacher and the student wish to know how much material of a given course the student has learned and what he has missed. The idea is that an estimate can be made of the entire extent of the student's knowledge by sampling it with well chosen questions. This is perhaps the most explicit reason for examinations. There are, however, implicit factors which are much more far reaching. The object in education is to produce individuals proficient in given skills or fields of knowledge. Indeed, the success of our efforts as teachers is determined by these results. Our working assumption is that, if our instruction is appropriate and well done—whatever its mode—and the student absorbs it well, he will be proficient. Examination grades are used as the immediate gauge of whether the student has absorbed the instruction sufficiently well. They also to variable extents are reflections of the quality of the instruction. In the past, all this has been taken more or less for granted. More recently, by utilizing methods borrowed from psychometrics, it is becoming possible to examine our teaching and our tests quantitatively, thus raising our standards for these beyond what really has been only intuitive.

* Instructor in Pharmacology.

Two of the problems which present themselves as needing investigation are: how can we predict which students will be "good" physicians with more accuracy than just the assumption that good students will become good physicians? And what do we mean by "good" physicians? To answer the first question, we need good predictor criteria, i.e., some set of measurements to indicate which students will "do well" as physicians. However, this is dependent upon first defining what we mean by "good" or "do well." This requires performance criteria, i.e., some way of assessing practicing physicians and translating the results into measurements which can then be correlated with our predictor criteria. Such techniques as Q-sorts are promising, but work along these lines is only in its beginning.

Grades in medical school rate as very important in these considerations for two reasons. First, because even without the "feedback" which eventually statistical techniques will provide they are already used as predictor criteria. Indeed, the student's being allowed to complete the curriculum is dependent upon adequate grades. Second, as performance criteria become available, grades will undoubtedly be among the first factors to be assessed as predictors. We should, therefore, make our grading techniques as accurate as the current state of the art permits.

Since grades one way or another are derived mainly from examinations, the questions then are how we shall construct

examinations, and how we can assess them.

There are two ways of assessing examinations. Reliability is the degree to which examinations are consistent, either within themselves or within a series of similar tests. Validity is the degree to which a test actually measures what it is intended to measure.

With respect to reliability, we may wish to study the reliability of one single test or of a general testing technique. There are several ways of evaluating a single test to determine its internal consistency. One of these is by calculating odd-even reliability coefficients. The individuals' number of correct responses on the odd-numbered items of the test is correlated with their number of correct responses on the even numbered items. If the test is perfectly consistent, and the items are completely randomly distributed with respect to difficulty, the correlation coefficient should be 1.000. This is, of course, rarely the case. However, with a well constructed examination, the coefficient will be large.

The reliability of a testing technique can be evaluated by subjecting a set of subjects to a series of tests constructed along the given lines. There will be some variability in the subjects, but, if the technique is reasonably reliable and an adequate number of subjects is used, the correlation coefficients of their scores from test to test will be quite significant.

The validity of a testing technique would be ideally determined by correlating its results with final performance criteria. However, as mentioned, we have no final performance criteria for medical education. We, therefore, for the present must rely upon interim criteria, such as over-all or cumulative averages or class standing or National Board scores in estimating the validity of specific techniques.

There are two general kinds of examinations—essay and so-called objective. Essay examinations have the disadvantage that they can include only a few samples of the student's knowledge because of the limitations of time. One can broaden the samples by making the questions less specific, but this is at the expense of more variability in the responses and in the scoring. It is axiomatic that the fewer the samples the greater the probability of error.

Bull (1) has pointed out the intrinsic lack of reliability of essay examinations. He suggests that multiple choice examinations are more satisfactory because they reduce the variance due to scoring, or "examiner error," to zero and make all variance become due to the performances of the examinees. The same may be said for any variety of question which is constructed so that scores may be assigned clerically with no element of opinion on the part of the examiner. If a test is composed entirely of these objective kinds of items, the score-rescore reliability obviously will be 100 per cent, barring clerical error. This, however, should not be taken to mean that such items are infallible. There may be problems of semantics or interpretation, or even of opinion as to which choice is the correct one. In other words, there may be examiner error in the construction of the test. It is, therefore, useful to have a method for determining which items on an examination fail to discriminate significantly between those students with much knowledge of the subject and those with little.

With these ideas in mind, the following studies were undertaken to explore the reliability and validity of some objective examinations, to determine whether they gave better results than those reported for essay examinations. A further object was to explore the individual items of the examinations, to discover how many of them showed signifi-

cance in discriminating between top and bottom students, and to assess whether, by eliminating less discriminant items, an improvement in reliability and validity might be gained.

SUBJECTS

The group studied was the sophomore class of 70 students, 1959–60, in Emory University School of Medicine. One was not included in the studies, since he was a "decelerated" student and did not follow the same curriculum as the others. This left a final N of 69.

METHOD

The examinations studied were those given in the course in medical pharmacology. For the past 6 years, these have been almost entirely of the objective type at this university. These were not specially designed with these studies in mind. Rather, they were the routine examinations made up in the usual way by various members of the faculty teaching the course. There were four of these.

Here are the kinds of questions used with the directions given and an example of each:

1. In the blank at the left of the question place the letter of the *one* correct answer.

   ____Adrenergic blocking drugs such as phentolamine (Regitine) block the pressor action of epinephrine by

   A. an action on the parasympathetic nervous system
   B. inactivating epinephrine by chemical combination
   C. preventing the combination of epinephrine with its "receptor substance" in arteriolar smooth muscle
   D. enchancing the action of amine oxidase

2. In the blank at the left of the statement place the letter *T* if the statement is true, *F* if the statement is false.

   ____The therapeutic index of all barbiturates is about the same.

3. In the blank at the left of the problem place the letter *A* if A is greater than B; enter the letter *B* if B is greater than A; enter the letter *C* if they are about equal; and enter the letter *D* if there is insufficient evidence to make a judgment.

   A. The affinity of CN^- for methemoglobin.

   ____

   B. The affinity of CN^- for cytochrome oxidase.

4. Place the letter of the *one* substance from the right-hand column which best matches each item in the left-hand column in the blank provided. A substance may be used more than once.

   ____Acute yellow atrophy of the liver

A. Lead	____Basophyllic stippling of red blood cells
B. Arsenic	____The Mad Hatter
C. Mercury	____Hypoxia without cyanosis
D. Carbon monoxide	____Acute renal tubular necrosis
E. Cyanide	____Coproporphyrin III in the urine
F. Phosphorus	____Amyl nitrate

5. Each sentence below consists of two statements joined by the word *because*. In the blank before each, place the following:

   A if both statements are true and the second is a correct explanation of the first.
   B if both statements are true but the second is *not* a *correct* explanation of the first.
   C if the first is true but the second false.
   D if the first is false but the second true.
   E if both statements are false.

   ____Mephobarbital is specifically anticonvulsant and this effect can be differentiated from its sedative action *because* it is structurally very similar to mesantoin.

The following studies were undertaken to ascertain how reliable and valid these examinations were.

The first was to determine intercorrelations among the four examinations and

the correlation of these with the final grades. This was to give an estimate of test-retest reliability. Next, the correlation was calculated between the final course grades and the class-standing at the end of the year for all courses, the latter being our interim criterion of success for estimating validity.

Because of the nonparametric distributions regularly encountered, and because the final evaluation of the students at the end of the year is in terms of rank-ordered class-standing, it was elected to use Spearman's rank-difference coefficient (rho) for all these determinations.

Goldstein (2) has criticized rank ordering as a method of assessment. He compared oral examinations, written essay examinations, and objective examinations, in which the results of each were expressed in rank order terms. He found low correlation among the three types. He, therefore, concluded that rank ordering is not a reliable technique. However, his results really show only that at least two of the three methods are not reliable, since he did not assess any of the measures independently or in comparison with other measures. Bull's paper shows that essay questions are not reliable. In fact, both oral and written essay examinations are really the same, although the medium of communication is different, and both have the same disadvantages—namely, the small number of samples of the student's knowledge and the problems of examiner error, as discussed above. We can conclude, therefore, that the low correlations found by Goldstein were due to the unreliability of essay examinations, and his paper cannot be taken to shed any light on the reliability or validity of either rank ordering or of objective examinations. Whether rank-ordered, objective examinations are reliable and valid or not, their correlation with rank-ordered essay examinations will be poor, because the reliability of the latter is poor.

The next study undertaken was to assess whether, by eliminating items from the tests which seemed not to discriminate between best and worst students, the over-all reliability and validity could be improved. This was done in the following way. On each test, the papers of the students who stood more than one standard deviation above the mean were compared with those of students who stood more than one standard deviation below the mean. Each question was subjected to a χ^2 test to determine whether it differentiated significantly between the upper and lower groups. Because of the expectation that even the poorest student should be able to answer 50–60 per cent of the questions correctly, those items which the lower group got right as frequently as the upper group were not eliminated. Only those items were rejected which the upper group missed as frequently as the lower group. Further, to allow maximum leniency before rejecting an item, a P of only 0.10 was required, and the Yates correction was not applied. This procedure was carried out for all four of the examinations which were studied.

Rank-difference coefficients were then calculated for each test between the unmodified score and the new score which was determined after these "indiscriminant" items were removed. A matrix of intercorrelations among the individual tests and the final score was calculated for the modified scores as for the unmodified scores, and the coefficient was also plotted between the new final score and the final class-standing.

RESULTS

The mean unmodified scores for each examination and the mean final grade, along with their standard deviations, are presented in Table 1.

TABLE 1

MEAN UNMODIFIED SCORES WITH THEIR STANDARD DEVIATIONS

Examination	Mean	Standard deviation
I	72.6	6.3
II	75.4	6.5
III	81.2	6.6
IV	80.9	7.2
Final grade (T)	77.7	5.3

The intercorrelations among the unmodified scores are presented in Table 2, along with their correlations with the final grades and the correlation between the final grades and the final class standing.

TABLE 2

RANK-DIFFERENCE COEFFICIENTS BETWEEN UNMODIFIED TESTS AND FINAL COURSE GRADE (T)

Test no.	II	III	IV	T
I	0.468	0.374	0.325	0.625
II		0.543	0.528	0.792
III			0.611	0.803
IV				0.802

Coefficient between final course grade and final class standing = 0.724.

The numbers of items on each examination which did not meet the criteria set forth above are shown in Table 3.

TABLE 3

NUMBER OF ITEMS ON EACH EXAMINATION REJECTED IN MODIFYING SCORES

Examination	Total no. items	No. items with P>0.10
I	88	32
II	106	16
III	118	25
IV	91	17

The mean modified scores and final grade, with their standard deviations, are presented in Table 4.

TABLE 4

MEAN SCORES AFTER MODIFICATION AND THEIR STANDARD DEVIATIONS

Examination	Mean	Standard deviation
I_x	86.9	6.9
II_x	78.9	7.2
III_x	85.6	7.0
IV_x	84.4	7.3
Final grade (T_x)	84.1	5.3

The intercorrelations among the modified scores are presented in Table 5, as well as the coefficient between the modified scores and the final class standing.

TABLE 5

RANK-DIFFERENCE COEFFICIENTS BETWEEN MODIFIED SCORES AND MODIFIED FINAL SCORES (T_x)

Test no.	II_x	III_x	IV_x	T_x
I_x	0.399	0.312	0.185	0.607
II_x		0.495	0.527	0.780
III_x			0.575	0.760
IV_x				0.779

Coefficient between modified final score and final class standing = 0.689.

The intercorrelations between the unmodified scores and the modified scores are presented in Table 6.

TABLE 6

RANK-DIFFERENCE COEFFICIENTS BETWEEN UNMODIFIED SCORES AND MODIFIED SCORES

Test I vs. I_x	0.830
Test II vs. II_x	0.938
Test III vs. III_x	0.931
Test IV vs. IV_x	0.922
Final scores, T vs. T_x	0.947

It is readily apparent that the unmodified tests are very satisfactory from a statistical viewpoint. The coefficient between the final course grade and the final class standing of 0.724 is highly significant ($P<0.001$), with an N of 69. All in all, test I appears to have been least good. Possibly this was related to the fact that it was the first test in a new, unfamiliar subject. Possibly, also, it was related to the fact that it had the smallest number of items, although it had only three less than Test IV.

Whereas there was good agreement between the unmodified scores and the scores modified by removing indiscriminant items (Table 6), the modified scores correlated less well with the final class standing, 0.689 versus 0.724. In Table 5 it is apparent that the reliability of these scores was also less good.

The question then arose whether we had been too lenient in our modification. Perhaps it would have yielded more precision if P of 0.05 had been demanded and if items that were "too easy" had been rejected as well as items that were "too hard." It was possible to reassess only Test IV in this way. Only eleven of the 91 items met these requirements. The rank-difference coefficient between a score based on these eleven items and the unmodified test was 0.749. This was much less good than the coefficient of 0.922 found between the original modification and the unmodified score. The rank-difference coefficient between the score based on these items and the final class standing was 0.519. This is close to the product of the coefficient between the class standing and the unmodified scores times that of class standing versus the second modification ($0.724 \times 0.749 = 0.542$). In other words, it is just about what would be expected.

It would be an interesting project next to explore the various types of "objective" question, such as true-false, multiple choice, etc., to determine whether these differ in discriminatory significance.

SUMMARY

The roles of grades in medical education were reviewed briefly. The reasons why reliable, valid examinations and grading techniques are essential were discussed. The question of whether objective examinations offer more in terms of reliability and validity than essay examinations was raised.

Four routine objective examinations in medical pharmacology were subjected to extensive statistical exploration. They turned out to be highly significantly reliable and valid in terms of rank difference coefficients. Efforts to improve them by eliminating apparently indiscriminant items, i.e., items which did not seem to distinguish between upper and lower groups of students, did not increase, but rather reduced the reliability and validity of the examinations. The coefficients in either case were much greater than those reported for essay examinations.

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The American Medical Student at the "Grass Roots" of Depressed Cultures: A Contribution to International Understanding*

IDA LOU COLLICK†

For all Americans who earnestly believe in the preservation of the basic truths and ideals inherent in our own culture, an open-minded international exchange of ideas is prerequisite to a better and more mature understanding of international problems.

One such effort—and a rather unique one—was initiated in the medical education field during the summer and fall of 1960. Administered by the Association of American Medical Colleges and sponsored by Smith Kline & French Laboratories, a Philadelphia pharmaceutical firm, foreign fellowships were awarded to selected junior and senior students applying from U. S. medical schools.

The purpose of this program is to provide qualified students with the opportunity to study and practice "grass roots" medicine in areas of the world where it is often carried on in primitive surroundings. To be able to work with dedicated men already practicing in far-off places offers young medical students special opportunities to benefit from unusual clinical experiences; to view and practice preventive medicine in greatly differing societies and cultures; to observe and study diseases not common to our own country; and to realize more fully the acute need for medical knowledge and care in remote areas of the world.

Although the medical experience is the principal basis for the award of a fellowship, a secondary object of the program is to enable these selected students to benefit from the unusual travel and cultural opportunity it presents, at the same time acting as individual representatives of the United States and our system of medical education.

A Selection Committee, comprised of six top-ranking American medical educators, selects students on the basis of their ability and potential and their objectives in wanting to work and study abroad.

In 1960, after careful review and screening of nearly 100 applicants, 29 Fellows were chosen to receive grants affording them this unique opportunity to carry out work-study programs in medical outposts in nineteen countries.

The language of medicine is universal. Disease control is a day-to-day practical matter which is world-wide. This opportunity for a few "physicians of the future" to become better acquainted with some of the more deeply rooted and basic problems in the world today, medical as well as social and political, which influence the thinking of peoples in foreign lands, should go far in cementing international friendships.

The contact between some of the best

* Articles from student Fellows receiving this award have been published in the March, April, and June issues of the *Journal of Medical Education* (1-3).

† Secretary, Foreign Fellowships Program. Association of American Medical Colleges, Evanston, Ill.

and most promising young medical students and the situations where need for medical personnel is great will show each of these future doctors just what can be accomplished in foreign areas by modern medical methods under proper direction. It is a chance for American students to become intimately acquainted with the serious medical problems in depressed cultures of the world and to recognize the tremendous challenge these present to international medicine. The program holds real potential for bringing together peoples and places widely separated in space and customs, thereby increasing mutual understanding and good will—so greatly needed nowadays.

All Fellows and overseas sponsors contributed greatly to the successful working arrangements which were achieved. Both have been enthusiastic in praise of the other's interest and cooperation toward accomplishing the objectives and purpose of the program.

Though the Fellows traveled far and wide to their "locations," a composite of their reactions has been invariably: "All too soon my time was up . . ." "The entire trip was fantastic—an educational adventure one only dreams of . . ." "One of the finest opportunities ever offered to a medical student . . ." "I developed a much greater respect for the highly complex integration and interdependence of our society . . ." "Whatever direction my medical career shall take, I am certain this summer will always remain one of the highlights of my medical experience . . ." "Leaving the dear friends I had made was difficult, but finally I am home—glad to be an American, but knowing ever more firmly that all of us, as members of the human race, are obliged to try to help our brothers beyond national boundaries."

Most Fellows saw firsthand and for the first time how a practical medical program is run with limited funds and only basic drugs. Their theoretical ideas of case management were brought to the practical level.

Specific observations point up many impressions—in particular the presence, throughout remote areas, of well-trained and, as often as not, board-certified physicians, dedicated to alleviating pain, saving lives, and, whenever possible, preventing disease.

There is great need for medical personnel in these remote areas—not only for foreign doctors, but for many young natives who need to be guided and supported into the medical profession, in order to reach a maximum number of people. The doctor must not only practice medicine, but inform and educate as well. He must be specially prepared to treat many diseases uncommon to the American-trained physician, and he must do it with a minimum of assistance and equipment; he must know something of preventive medicine. Of necessity he will live simply, with a minimum of comforts, and his life must be dedicated wholly to the ministry of man's needs.

Certainly one cannot ignore the interrelation of religion, philosophies, and culture in a country which is not only extremely beautiful but is full of quite ancient traditions. The interplay of medical, social, economic, and religious factors is an inescapable part of daily practice. Varied customs from thousands of years ago are still everyday habits. Medical care and health education programs must be carried on with extreme tact, hand-in-hand with ancient religious and cultural beliefs which require explanation and modification. Doctors in such medical outposts do not think of any disease as a mere condition, since it involves the whole person, his family and his village, which fact emphasizes that a person and his disease must be treated in context with his culture and beliefs, and that preconceived ideas must

be disregarded in order to see life as the patient sees it.

Native people are honest and make no excuses; they are a rightfully proud people, with seemingly insurmountable problems which they are struggling to solve in ways that seem best for them.

The "white" doctor with his "magic" medicine is shown courtesy and kindness even in remote villages. Although American customs and actions must have seemed odd to them, without question native medical personnel as well as patients accepted the visiting Fellow as one of the medical team.

A single example of sheer gratitude . . . A 2-week post-operative patient, so overjoyed at seeing on the roadside the doctors who had stopped his 3-year continual vomiting that he danced a jig and gave them all the bananas their mules could carry; whereupon he and his smiling friends accompanied the mission doctor and visiting student on foot for several miles.

Overseas sponsors proved to be stimulating teachers, offering excellent clinical instruction with an abundance of case material for demonstration. There seems no better way to present their comments than to quote:

"The program is wonderful. Please send us another student next year."

"You could have sent no better man—humble, sincere, conscientious—a man in fact who was a good ambassador for your country."

"We sincerely hope these Fellowships will be continued."

"The student came to our hospital at a very busy time. He not only participated in the teaching program I had planned for him, but also was intensely engaged in the active practice of clinical medicine, being my only colleague for about 2 months. There was a good exchange of ideas, and I was impressed with the many new theories and up-to-date information which I could receive from him. His stay with us relieved the pressure of my many duties, brought me up-to-date on theory, and taught him practical therapeutics."

"He was alert and eager to learn, both in medicine and in sociology. His youth and inquiring mind were a stimulus to us."

"The impact of a totally new culture upon a young man helps him to challenge many of his notions concerning way of life, standard of living, philosophy, and religion. In short, a long visit out here cannot be other than a stimulating educational experience for a receptive young student. It is good for us working in these faraway areas to have the benefit of the current year's lectures in medical school. Undoubtedly the greatest benefit to us, however, is the stimulus of teaching an inquiring young man who challenges us as he himself is being challenged."

"In my opinion there are three beneficiaries: the student, the host institution, and international relations. International relations are obviously furthered each time a young person from America has an opportunity to become fairly well acquainted with the people of a different culture. Misunderstanding of other peoples is a strong American characteristic; when these young men become acquainted with the values and cultural patterns of alien lands, their contribution to the maintenance of good international relations increases mutual understanding and good will between peoples in greatly differing societies."

"My only major criticism of this plan is that it is far too small in scope. Such a program should be available to a much larger number of medical students. I have right now three letters from young men who want to come here next year. I would like to see all three of them come."

"I want to take this opportunity to express my appreciation for the vision and unselfish service in gifts of all those who have made this plan possible."

"Personally, I profited from the 'refresher course' with this young man. In the three and one-half years since returning here there have been few opportunities for medical consultation with anyone."

Such comments from directors of host institutions, as well as physicians practicing on their staffs, tell a story of real achievement.

This type of program can further international relations in ways which at present we are unable to calculate. Recent events have demonstrated, as never before, the necessity for greater understanding among the world's peoples. Making friendships and learning how other peoples live and think . . . gaining an insight, even limited, into the social, cultural, and political life and problems of other countries . . . understanding their needs and how best to cope with them . . . exchanging ideas—all result in a deepening of one's own personality, a strengthening of character, a widening of moral obligation, and the recognition that, though there may be varied religions and different ways and ideas of life which contrast strongly with our own, one still finds that everywhere there are genuine, helpful, friendly people who may enter one's life with an emotional impact never to be forgotten.

For the 1961 program, 81 applications were received from 46 medical schools. Thirty Fellows were chosen to receive this year's grants. They will work in Pakistan, Korea, Japan, Burma, New Hebrides, India, Thailand, Cambodia, Haiti, Ghana, Republic of Congo, Tanganyika, and other African countries.

As this new chapter in American medical education and international relations continues to unfold, we have reason to hope that the annual $60,000 expenditure involved well may create more good will for America than far greater amounts being channeled to these underdeveloped areas from other sources. Because the visiting students deal with a country's people and not the government per se, it is programs such as this that represent America to the people of foreign nations.

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Foreign Doctors in the U.S.A.*

FROM A CORRESPONDENT

The United States attracts many doctors of other lands for a variety of reasons, including the present high prestige of American medicine, the high standard of living, and the opportunities for research. Some doctors go to spend a year or so there "to see what it is like" before they settle down in their own country; others, disgruntled with the medical set-up at home, emigrate to what they regard as the land of the free doctor. Conversely, American hospitals welcome foreign physicians—some to promote international bonhomie, some to provide specialist training for those from places where it cannot be got, and a great number to fill the otherwise unfillable vacancies in their house staff. The State Department's Educational Exchange Program, by provision of special visas, made it easier for foreign doctors to train in the United States, and the number has grown till last year a survey showed that there were no fewer than 8,392 foreign-qualified doctors training in 40 states (some states will not allow foreign graduates to practice at all).

The foreign doctors play a large part in staffing the hospitals: last year in Massachusetts, for instance, 36% of the interns and 28% of the residents were graduates of foreign schools—and 6% of the internships and 6% of the residencies were unfilled.[1] As might be expected, the proportion of the house-officers who qualified abroad tends to be higher away from the teaching centers, and in Massachusetts it ranges from 65% at the Massachusetts General Hospital to 100% in many of the smaller hospitals on the outskirts of Boston and elsewhere in the State.

This situation is bound to lead to many disappointments. Some of the foreign doctors have found that the postgraduate training they have received has been of poor quality, and there has been a regrettable tendency for some hospitals to use the foreign graduates (not to mention some American graduates) as cheap labour. On the other hand, many hospitals have found the foreign doctors to have standards lower than those customary in the United States; and there have been difficulties over language, many doctors arriving in the United States unable to understand English. (Some hospitals have actually set up special intensive training programmes to teach their housemen English before letting them loose on the patients.) Some lay magazines, eager for any stick to beat the medical profession and the hospitals with, have published alarming articles about the poor quality and linguistic difficulties of some foreign graduates.

A SPECIAL EXAMINATION

Deciding that something had to be done, and that it was impossible to assess adequately every medical school in the world, the American Medical Association, the American Hospital Association, the Association of American Medical Colleges, and the Federation of State Medical Boards together sponsored the Educational Council for Foreign Medical Graduates. Established in 1957, this body examines credentials of foreign graduates, and twice yearly it holds

*Reprinted with permission from *The Lancet*, January 7, p. 43, 1961.

[1] Bearse, C. *New Engl. F. Med.* 1960, **262**, 1014.

an examination for them, at centres throughout the United States and throughout the world.[2]

This is a multiple-choice examination (in which some 90 per cent of the questions are on clinical subjects and the rest on basic sciences), and an English test, in which a history is dictated and the candidate is required to write it down as it would appear in the case-record. The passmark is 75 per cent, and those who score 70-74 per cent are given a temporary certificate, valid for two years.

Many hospitals require foreign graduates (the term includes United States citizens if they went to medical school abroad) to have the E.C.F.M.G. certificate before they can be accepted. Moreover, some 25 States insist on the certificate before they will consider an application for a State licence to practice, and some specialty boards require foreign graduates to have the certificate before admitting them to the specialist examination. But many hospitals, fearful of being unable to fill their house-appointments (the pass-rate was less than half in the first four examinations) have made no such stipulation.

SANCTIONS AND THEIR EFFECT

Eventually the American Hospital Association decided to withdraw its accreditation from hospitals employing foreign graduates not licenced by the E.C.F.M.G.; that is to say, their internship and residency programmes would no longer be officially approved. This applied to those already in training as well as to those not yet appointed. A deadline was set, and as a result 6,029 candidates sat the examination in last March (when 33 per cent passed) and 8,713 sat it in September (when 43 per cent passed and 28 per cent were awarded a two-year extension).

Those who failed the examination include nearly 2,500 doctors now in the United States,[3] and their situation has created many problems—for the doctors themselves, for the hospitals employing them, and even for the State Department. The hospitals have the choice of dismissing them (often without the possibility of replacing them, and often in breach of a contract in the case of those appointed, before the deadline was set, for a programme lasting several years), or of retaining them, with the risk of being denied accreditation, which would damage the hospitals' prestige and make it impossible ever to attract house doctors of high quality.

Many hospitals, believing that the situation is hopeless without uncertified foreign graduates, will defy the ban and risk losing their accreditation and lowering their standards of work. Some hospitals, feeling an obligation to their uncertified housemen, are considering plans to employ them in non-clinical positions[4]—not a very satisfactory solution, for they will still need people in the clinical appointments, and they may run into financial difficulties if they duplicate their staff, while the doctors concerned, though still employed, will not be getting the training and experience they sought.

Many of these doctors are on temporary visas, valid only while they are taking specific training; and the State Department is concerned about the adverse effects on foreign relations of the mass deportation that is threatened.

Finally, the foreign doctors themselves

[2] Those who wish to do postgraduate clinical work in the United States must generally take the examination before appointment; the address is Educational Council for Foreign Medical Graduates, 1710, Orrington Avenue, Evanston, Illinois, U.S.A.

[3] *New York Times*, Nov. 19, 1960.

[4] *Daily Item*, Port Chester, N.Y., Nov. 23, 1960.

are not only unhappy at having their careers interrupted; many feel bitter about the examination, claiming that it is unfair.[5] Certainly, it is not the same examination the American graduates take (the great majority sit the examination of the National Board of Medical Examiners, which cannot give its certificate to foreign graduates; those who pass can easily obtain a licence in 44 of the 50 States); and its multiple-choice style is unfamiliar to those used to essay and oral examinations. But your correspondent, who has sat both the E.C.F.M.G. examination and part 2 (the clinical subjects) of the National Board examination, found the E.C.F.M.G. test much easier. Poor knowledge of English would be a handicap in the examination —as it would in clinical practice (though in some parts of the United States a knowledge of Finnish or Ukrainian would be more useful to the doctor than a knowledge of English). A more valid criticism might be the unfairness of preventing people in the middle of their training from completing it because they fail a test that had not been devised at the start of their training; and it is hard to see the necessity for a new examination when the National Board is well established and will examine foreign graduates for a specific purpose (e.g., as a screening process before they can be examined for a Massachusetts State licence).

[5] *Resident Physician*, 1960, 6, 67.

A BRITISH PARALLEL?

In Britain, where it is becoming harder for small hospitals to find housemen and registrars, and many foreign doctors come for postgraduate training, a similar set of problems may well arise; and the authorities might ponder the American experience and ask what lessons it holds for Britain.

MEDICAL EDUCATION FORUM

Editorial

A.A.M.C. TEACHING HOSPITAL SECTION SYMPOSIUM

DONALD J. CASELEY

The Teaching Hospital Section of the Association of American Medical Colleges chose for the central theme of its third annual meeting "The Effect of Teaching and Research on the Medical School Teaching Hospital." In order that the timeliness and relevance of this subject might be better understood, one phrase from the deliberations of the original planning committee for the Section is restated:

> The purpose of the Section is the creation of a forum for the study of the role of the teaching hospitals in medical education . . . and the promotion of greater understanding between administrators of medical schools and teaching hospitals. (Planning Committee, Iowa City, Iowa, May 21, 1958)

Thus, the subject area selected examines virtually the pivotal point in the role of the teaching hospitals and suggests a cause-and-effect relationship with the medical schools.

In seeking the most provocative means of examining the program's theme, several approaches seemed inviting but, of these, three of the areas principally affected were selected: (*a*) quality of care, (*b*) the hospital's community relations, and (*c*) the hospital's economy. The papers which compose the symposium were offered at this meeting in an attempt to "cone down" the thinking of executives of both medical schools and of teaching hospitals in these important areas of common interest. The essayists sensed the implications of the related subjects and presented their material convincingly. Retrospectively, it seemed remarkable to the program planners that the papers complemented each other so well and that, withal, the parts of a complex subject fitted together with remarkable cohesion.

The Teaching Hospital Section of the Association is proud to present in this issue this Symposium, its first significant contribution to the literature of Medical Education.

Datagrams*

RELATIONSHIP OF EXPENDITURES DERIVED FROM FUNDS "RESTRICTED" FOR SPECIFIC PROGRAMS TO TOTAL EXPENDITURES DERIVED FROM ALL SOURCES IN 1959 (44 PRIVATE AND 37 PUBLIC FOUR-YEAR MEDICAL SCHOOLS)

The sources of financial support of medical colleges readily fall into two categories:

1. Expenditures derived from "unrestricted" funds which the medical school can use in any way it sees fit.

2. Expenditures derived from funds granted by outside agencies that are "restricted" for particular purposes. There is no fixed relationship between the expenditures for these programs and the school's over-all expenditures. But in attempting the analysis of the financing of medical education, this relationship is nevertheless important.

Figures 1 and 2 on the following page show the relationship between expenditures from "restricted" funds and expenditures derived from all funds for the fiscal year 1958-59. The presentation is made separately for private and public four-year schools.

It can be argued that some "restricted" funds support programs that are so fundamental to the primary goals of the medical college that they can be considered as income for "non-restricted" activities. For the purposes of this presentation, however, we are considering expenditures from funds that are restricted in any way for whatever purpose as belonging in the "restricted" category. Included are Federal grants restricted for teaching and training, endowment income restricted for libraries or other purposes, as well as all funds restricted for research. Presenting expenditure data in this way frees one of the responsibility of exercising judgment as to the categorization of any source of expenditure except that from payments for research overhead. Since overhead payments are to help compensate the medical school for administrative and other indirect costs of research and since the indirect costs of all medical school programs must be met from unrestricted funds, payments for research overhead have been added to funds available for unrestricted purposes.

In Figures 1 and 2 the schools are ranked in the descending order of magnitude of expenditures from "unrestricted" funds. These expenditures are shown on the left side of the chart. For each school the corresponding expenditures from "restricted" funds are shown on the right. Federal funds are shown in black. The percentage figures indicate the relationship between expenditures derived from funds "restricted" for specific programs to total expenditures derived from *all* sources.

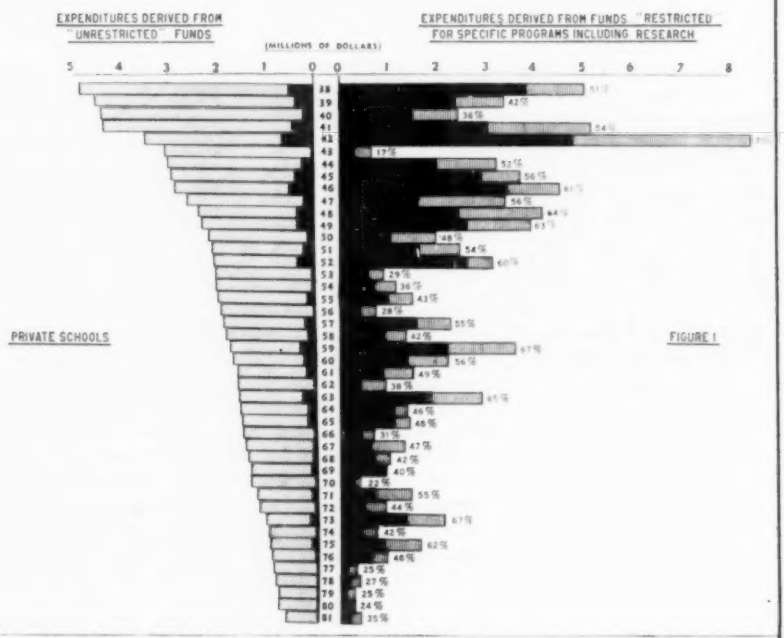
The lack of uniformity in these percentage figures is readily apparent. For the public schools, they range from 12% to 70%; the over-all percentage is 40%. For the private schools, the range is from 17% to 71% and the over-all percentage is 51%.

In view of the added costs assumed by the medical schools in the administration of "restricted" funds, the wide variation among schools in the proportion of "restricted" to "non-restricted" funds could give rise to the question of optimum limits in the proportion of expenditures from "restricted" funds to total expenditures. Obviously this is something each school must decide for itself.

Limitations upon the use of funds restricted to specified research projects emphasize the need for the institutional research grants approved by the last Congress. The latitude provided to the schools in determining the research programs which are to be supported by these institutional grants will permit the medical schools to better coordinate and balance their research programs and will also permit the schools without the means of financing research from their own funds to set up the development of this very important activity.

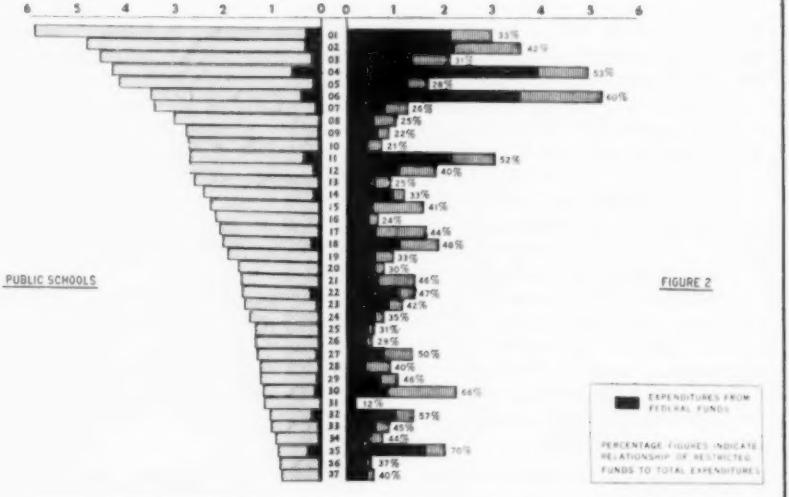
*Submitted by the Division of Operational Studies of the AAMC.

RELATIONSHIP OF EXPENDITURES DERIVED FROM FUNDS "RESTRICTED" FOR SPECIFIC PROGRAMS TO TOTAL EXPENDITURES DERIVED FROM ALL SOURCES IN 1959 (44 PRIVATE AND 37 PUBLIC FOUR-YEAR MEDICAL SCHOOLS)



PRIVATE SCHOOLS

FIGURE 1



PUBLIC SCHOOLS

FIGURE 2

Address

THE CARE AND FEEDING OF NONCONFORMISTS*

DONALD J. CASELEY†

"When, in the course of human events, it becomes necessary for one people to dissolve the political bonds which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation. We hold these truths to be self-evident, that *all men are created equal*, that they are endowed by their Creator with certain unalienable rights, that among these are Life, Liberty and the *Pursuit of Happiness*."

In this expression, which is high among those which establish true milestones in the forward and upward motion of mankind, there are two phrases which have been interpreted rather widely in a manner little contemplated by the authors and the signers of the document. One of these—and a take-off point for this essay—is "all men are created equal." The other, "the pursuit of happiness," is an equally arresting subject. For purposes of constitutional justification, it has been expropriated by a good many people who have become, consciously or unconsciously, advocates of the cult of hedonism—pleasure as an end in itself and for itself. This must be reserved for another discourse.

The *equality* to which all men are allegedly born and which was a promise of such fundamental importance to the Colonial fathers must surely have been, even then, an entity more of political status than of physiological and intellectual strength or weakness. The equality of 1776 was a guarantee of the government, of all the people, that the human capacity for thought, action, and spiritual independence would not be fettered by the existing traditional delimiting boundaries of poverty, station, family, creed, and national origin. In far too many of our contemporary conventions the term "equality" has evolved to imply an artificial control or even abrogation of the characteristics—intelligence, energy, strength, will, courage—which effectively differentiate between human beings and which produce the fruitful, progressive prototype of what we associate with excellence.

Schools, in many places, have been geared to the median. Woe unto the bright, able youngster, endowed more liberally than his peers in the matter of intellect, who could push on into new and exciting study areas; likewise, woe unto the bricklayer who, because he can organize his supply of mortar, his bricks, and his reflexes into one smooth effective activity, wants to lay 1,000 bricks a day (and can) instead of the established standard of 600. Our culture and our economy are studded with such examples; in fact, one is almost pessimistically persuaded that the opportunities for excellence are doomed to extinction.

* Address presented to the Foreign Students Association, University of Illinois.
† Medical Director, University of Illinois Research and Educational Hospitals; Associate Dean, University of Illinois College of Medicine.

An observation made recently by Dr. Claude M. Fuess, headmaster at Phillips Academy, is startling almost to the point of shock. "It can be argued," he says, "that the United States and the Soviet Union, without either intent or realization, have been exchanging national philosophies. In our insistence that all men and women engaged in the same jobs should be compensated in the same amount, regardless of activity, or quantity and quality of production, we have been moving toward the fundamental principles of Marxism. The Russians, on the other hand, convinced that exceptional energy and ability are national assets and should therefore be well rewarded, have adopted some of the stimulating practices associated with the capitalistic system. If they find a brilliant scientist they apparently offer him unusual opportunities and privileges; and they now pay gifted writers, musicians, and even teachers salaries which make their positions worth competing for."[1] He mentions a salary of $35,000–$50,000 at current exchange rates for a University professor. The onward trend toward negotiated mediocrity, in which the inherent differences between men are obliterated—with the accepted standard invariable adjusted not upward but downward—has made one individual correspond in his production output (whether it be measured in goods, services or thought) with the next man, to the point that the word "individual" is becoming a semantic sham.

The pressures in our society are to conform. The high school girl, who wouldn't be caught dead wearing overshoes in the season's worst snow because it is not the accepted uniform of the day but who will appear in dirty white sneakers is a product, a symptom, or, possibly, a victim of our national fetish to attain the "norm." She is little worse, if as bad, however, as her suburban father who, under the quiet, unspoken pressure which pervades that station wagon society, mows his half-acre every Saturday morning when he would much rather read Henry James or paint a landscape. If he had his way (if he really had the courage), he would plant the whole thing in rye to keep the dust down and let it grow to its natural height and tell his neighbors to "go to hell." He is possibly more culpable than his sneaker-shod, snow-wading daughter. By now, he, at least, should have gained the emancipation of spirit that comes with having met the competition of business and having won at least a fair share of the skirmishes. But no, by society's standards and subtle compulsions, he is a conformist—a conformed, fescue-rose, garden-and-patio man.

The dedication to the pattern has its outcroppings, symbolic of the undersoil of conformity, in almost every stratum of our national existence. Probably, in no milieu of our society has the ritual of conforming to the pattern been approached with more reverence and religious zeal than in the corporate community. William H. Whyte, Jr., an editor of *Fortune* and author of the extremely perceptive and analytical book, *The Organization Man*, tells of the creation of the image of the "well rounded" man who eschews unorthodox thought and action, and is firm in his belief that the "group think" approach to creativity is the modern and more effective replacement of the individual with drive and imagination—the pioneer of the past.

Whyte recounts an interesting study which was conducted a couple of years ago in which he asked personnel directors of 150 corporations and presidents of 150 corporations to state their choice, assuming it was a case of "either-or,"

[1] The Retreat from Excellence—*Saturday Review*, March 26, 1960.

of two types of person to be the leader of the corporation. On the one hand, he described the adaptable administrative type, schooled in managerial skills, a smooth-functioning, human relations-group worker. In the antithetical prototype he listed the characteristics of the individualist: a man with strong convictions, not shy about making unorthodox decisions, one who would unsettle tested procedures, as well as his colleagues.

The responses apparently provoked strong feelings, but they boiled down to this: the presidents voted 50 per cent for the administrator and 50 per cent for the unorthodox individualist; the personnel men wanted the administrator in 70 per cent of their choices.

This philosophy becomes established early in life in the corporate slave. A group of G.E. trainees were asked what they would do if a genius like Steinmetz applied to them for a job. After some thought, a few decided he "might work out." They could probably "iron out his rough spots," compress him into the accepted mold. Others said, "No. He'd probably be too anti-social to re-mold." One said, "I don't think we'd put up with him now."

There seems to be, on the evidence at hand, a distressing feeling that the "great ideas" have all been discovered, and that all the basic scientific developments worth while are now available. What we need, now that the fundamental creative work is completed, is the practical fellow, loyal to the company, who will "do the job" and work amiably with his fellow creatures. Sacrifice brilliance for human understanding any time, says one.

The contemporary climate appears to be uninviting for the nonconformist. Interestingly enough, the term itself has assumed, in modern times, a connotation quite at variance with that which prevailed in the 16- and 1700's. Then, the nonconformist was that rugged individualist who took exception to the accepted ecclesiastical tenets of the time. Martin Luther was an example. He exhibited self-reliance, courage, and a towering indifference to the threats of the society in which he lived—threats to expel him (or worse) from their midst for his departure from convention.

The way of the nonconformist has never been easy. Pythagoras was misunderstood. Socrates, Jesus, Copoernicus, Galileo, and Newton—all evoked an antagonistic reaction from the society of their times. It may well be regarded as axiomatic that to be great is to be misunderstood. These great men—all possessing the characteristics of the nonconformist—dared to question the comfortable doctrines and dogma of their day. They evolved new concepts, based on logic, physical fact, and truths as they pertain to human behavior and spiritual needs of mankind. That they were misunderstood is not strange. Who was there to understand them but their intellectual inferiors whose only defense of their established position and security lay in the perpetuation of the *status quo?* Should true "greats" (nonconformists of the productive variety) coexist in the same society, because of their accustomed repulsion by the masses, the chances are, as "like" charges, they would repel each other.

How did they fare? Personally they fared badly, by and large, but the output of their intellects has been preserved intact, in most cases, to be passed down as invaluable treasures in our intellectual store house. These concepts, validated by time, have become our heritage of wisdom.

And now, who are the noncomformists and where are they? The real non-

conformists, in the main, are backed into the remaining strongholds of freedom of thought. These are in the arts and in the academic society. They exist, but seldom flourish, in industry and commerce. An exception, possibly, is Charles Percy, president of Bell and Howell, who is a disciple of individualism which is based on a broadly educated mind. He is at substantial variance with what has appeared, until very recently at least, as the general philosophy of industry which wants the educational system to produce more and more specialists trained in narrower and narrower fields to the point of excluding the training of the brain for its highest function—"creative thought." Percy, in addressing the National School Board Association, asserted that today's shortage is of persons "with broad general knowledge."

If only to recognize their spurious presence, a word must be said about the pseudo-nonconformists. These creatures, retrospectively subjects of pity, believe that nonconformity of behavior somehow gives them special status in our society. In the main, these "oddballs" are satisfying their insatiable ego appetites, and one assumes that by "acting out" they fancy that they will develop the true creativity of the nonconforming mind. I presume that, to the degree that they are not pure and simple post-adolescent rebels, the contemporary "beatniks" are examples of the superficial nonconformist whose depth is measured usually in molecular units.

The public must discriminate between the "phony" and the true intellectual nonconformist. The former, by his anti-social or at least a-social behavior, occasionally casts an unfortunate blight over all who deviate from society's norms. Ralph Waldo Emerson in his essay, "Self Reliance," says: "Who so would be a man must be a nonconformist. He who would gather immortal palms must not be hindered by the name of goodness, but must explore if it be goodness. Nothing is at last sacred but the integrity of your own mind."

The modern nonconformist must at once unfetter his mind, that it may transcend the bounds of today's accepted fact, but must also recognize his responsibility to respect the rights of others. He must explore to the limits of his mind's capacities the periphery of knowledge, yet conform in social usages and customs when to depart from them would be simply to fulfill a superficial role for the sake of a public image. In the academic community this means that the scholar must achieve full and complete devotion to the treatment of known fact and to use these as the bridges to the unknown. It also implies that, outside this scope of emancipated thought, there is no obligation to be a "screwball" or to pontificate in subject areas which are relatively unknown to him.

The academic freedom to "nonconform" is an established part of the bill of intellectual rights. This climate of uninhibited thought processes and pursuit of knowledge should permeate the class room and the seminar. The right of the professorial staff to pursue research has as its counterpart the desire on the part of their bright students to develop their own areas of special interest in the learning process. The lockstep curriculum of some of today's educational programs are antipodal to this concept. The freedom to develop these special pursuits, as a student, will hasten the day when his sense of responsibility for his own continuing self-education, *in toto* and *ad perpetuatum*, will be a reality.

The productively nonconforming academician and student must be protected against the unnecessary incursions of administrative fiat. This is one of the

most difficult areas of decision for any executive: Where is the optimum point of freedom versus rules and regulations? Where is the breakoff point which, if exceeded, throttles productivity or, in the other direction, produces chaos and thus ultimately threatens creativity? The true administrative challenge is then to recognize the basic function to serve as an expediter and catalyst for those who produce and create. The executive function, above all, must never be regarded as an end in itself.

On the other hand, one cannot plead for nonconformity as an end in itself for, disembodied, this plea is empty—a pure abstraction. Differing, or nonconforming, with prevailing opinion simply because it prevails is as specious as to acquiesce blindly. Superficial nonconformity is even a symptom of a lack of courage, for, as Whyte says, "few are more pathetic than those who flaunt their outer differences to expiate their inner surrender."

The rule of life for the nonconformist who is being true to himself might well be that of Emerson: "What I must do is all that concerns me, not what people think. This rule, equally arduous in actual and in intellectual life, may serve for the whole distinction between greatness and meanness. It is the harder, because you will always find those who think they know what is your duty better than you know it. It is easy, in the world, to live after the world's opinion; it is easy, in solitude, to live after our own; but the great man is he who, in the midst of the crowd, keeps with perfect sweetness the independence of solitude."

The nonconformist must be preserved at all costs, for we must depend upon his continuing creativity and thought production to counteract the stultifying influences of complacency and stodginess. The nonconformist, thinking through problems without the empirical bounds of the past, will be our forward echelon in the constant attack on the perimeters of knowledge. He is the hope for the future.

Letters to the Editor

The medical profession can make a significant contribution to the nation's effort to assist the countries of the Middle East, Asia, Africa, and Latin America.

The basis of the program is that every medical school in the United States enroll each year in its freshman class, besides its present complement, one additional student from the underdeveloped countries. The result would be the equivalent of a new medical school with an incoming class of 86. (The average freshman class in 1959–60 numbered about 96.)

Whatever costs are involved, including scholarships, stipends, and travel costs for the students, could be defrayed by interested private foundations, the governments involved, and from United States assistance funds.

There are many advantages to this plan, particularly in comparison with suggestions that have been made for a separate school for students of this type. It could be started almost at once—in September, 1961. No significant capital investment or increase in faculty would be required of any school. There would be no problems of securing a site and funds for construction or of recruiting teachers. The foreign student would be an integral part of a group of American students, not segregated with other foreigners.

Certainly, problems would appear. There may not be enough students adequately prepared educationally to fill the available places at the start of the program. Supplementary premedical education and special tutoring arrangements could overcome this handicap in the following years. When the foreign student receives his M.D. degree, he will have to be given access to first-rate institutions for postgraduate, internship, and residency training. During this long educational program lasting 5–8 or more years, provision should be made for him to return to his native land every year or 2 for several months so that he can maintain contact with the health problems and medical organizations there.

Similar plans could be applied in other fields, such as education and engineering.

If such a program is pursued, then by the end of the decade a continuous stream of well trained physicians, many of them specialists in the various branches of medicine, will start leaving these shores to take up positions of responsibility in their own countries. They will carry with them the most advanced knowledge of technical matters, and, we hope, an appreciation of American culture and a feeling of friendship for the United States.

JEROME NADELHAFT, M.D.[1]
Assistant Professor of Radiology
Department of Surgery,
The Chicago Medical School

Dear Doctor Bowers:

Your letter of February 25, addressed to me at Tulane, has been forwarded to Cali. I shall be here until the last week in May, in order to complete my 5-year period of service in the Tulane-Colombia Program in Medical Education. In your letter you offer me the opportunity of making comments and suggestions with reference to the ways in which medical educators in the United States may be

[1] Mailing Address: Chairman, Department of Radiology, Mount Sinai Hospital, Chicago 8, Ill.

of help in programs of Medical Education elsewhere in the world. Here are a few of my thoughts:

Although I have in years past become familiar with Medical Education in countries other than Colombia, especially Mexico, Chile, and Argentina, it has only been during my residence in Colombia that I have had an opportunity to obtain considerable background to assess the impact of North American medical training on the development of medicine in Latin America. Here in Colombia during the past 5 years rather remarkable progress has been made, and most of this has been due to direct and indirect stimulus from North America. There is still need for assistance, not only from North American medical educators resident in Colombia but continued funds for fellowships to study in the United States. Very few Latin American physicians, even with a substantial private practice, have sufficient income to support themselves and their families for as much as 1 year of graduate training. Even though these physicians may be of high caliber, they are usually not willing to dedicate themselves on their return to full-time academic medicine. The younger men who have recently obtained their medical degrees have no private sources of income for graduate study. They have had the better undergraduate training and are the most likely ones to develop full-time dedication to medical instruction. This will be a financial sacrifice for them, since in the seven medical schools of Colombia the maximum salary for Heads of Departments is about U.S. $400 per month. The only exception is in the newly developed postgraduate school in the Military Hospital in Bogotá, where the salary scale for exclusive full-time clinicians amounts to about U.S. $1,000 per month.

Another point on which I may briefly comment is the required screening examination for Latin American physicians. For Colombia this is given in Cali, and I have had an opportunity to interview and advise many of the young doctors who are applicants for this examination. Not only does this serve as a screening to eliminate the unprepared but also it serves as stimulus for those who are applying for the examination and for internship or residency in a North American hospital. The experience here has been most satisfactory.

Nearly 20 years ago when I was in Buenos Aires a well known physician said to me, "You in North America claim to be our good friends. You expect us to visit you in the United States, but very few North Americans in the professional fields ever bother to visit us." It is important for North Americans to carry their message to Latin America, not just as tourists or in attendance at medical meetings, but preferably for longer periods so that there comes to be a mutual understanding of each others problems and programs. The brief period which Dr. Darley had in Mexico last May was most helpful in discussions on Medical Education. I hope that he and others from the Association of American Medical Colleges will be able to find time for visits of longer duration to South America.

I am not sure whether my comments be helpful but they do represent my conclusions from my helpful contacts and friendship during my period of service in Colombia.

Dr. Ernest Carroll Faust
Field Coordinator
Tulane-Colombia Program
in Medical Education

ABSTRACTS FROM THE WORLD OF MEDICAL EDUCATION

ANGELA SANCHEZ-BARBUDO, Ph.D.
Abstract Editor

Le Progrès Technique et les Crimes contre les Masses (Technical Progress and Mass Crime). MARC DVORJETSKI, M.D. Revue d'Histoire de la Medecine Hebraïque, T. 13, No. 47 pp. 5-16 (March), 1960.

Dr. Dvorjetski, a Professor at Bar Ilan University, Tel Aviv, recalls those crimes against mankind which History must not forget if we want to prevent their repetition (this paper was presented to UNESCO's International Congress of Criminal and Social Prevention, held in Paris in 1959). The most monstrous example of all times is seen in the mass exterminations and genocide committed by the Nazis in the years between 1939 and 1945. Although the killing of millions of allied soldiers by the Germans—and vice versa—must be considered a consequence of legitimate warfare, nothing, he points out, can justify the gas chamber murders of 6,000,000 Jews (1,200,000 children among them); the massacre of 2,500,000 Poles; of 3,000,000 Russian civilians, etc. Stressed in this paper is the abhorrent abuse of scientific and technical knowledge in the conception and execution of those crimes. When Hitler came to power a majority of German intellectuals, providing the Nazi regime with its theoretic, pseudo-scientific basis, put their science and arts at the service of the vastest crime organization in history. The racial biological concept, based on the nature law of survival of the aptest, was given a political meaning by the German scientists: as the most perfect creation from the racial point of view the Germans had the mission to determine which ethnic group had or had not the right to live. The Jews, the most incapable to adapt and be "germanized," must disappear first (followed by the Gypsies, the French, the Russians, etc.) In the Nazi State *euthanasia*, contrary to all moral implications of the concept, meant death to all those who were considered worthless for the regime. Nazi psychiatrists, commissioned by Himmler, searched hospitals and asylums for candidates for the *Gnadentod*; under the auspices of prominent professors (whose names appear in this communication) special small gas chambers were tried out to extermine infants *en masse*. Whereas these and similar "euthanasic" efforts were halted in 1941 because of protests by relatives of the victims and the German clergy, they served as tests for the much larger gas chambers put into effect by 1942 in the concentration camps. Scientific crime, it is pointed out, was committed by the Nazis in two ways: they used the conquests of science to dehumanize man and to kill him with all technical skills. On the other hand, they utilized their victims to increase the Nazi's scientific potential of destruction, e.g., their so-called *Humanversuche*, the medical experiments carried out on captive subjects (Jews, concentration camp inmates, war prisoners, etc.) by German doctors with full knowledge of the damage inflicted and without

any measure to prevent suffering or death. Nazi scientists were also doing research on the most efficient methods of mass sterilization, to be inflicted on the other European peoples after victory was assured and the *Pax Germanica* established on the Continent. In 1947, Nazi "scientific" medicine has been condemned by first World Congress of Medicine after the war. Since then, a new threat to humanity has arisen with the development of nuclear science which may bring about the extermination of the human race. Measures adopted through international meetings of scientists, the author believes, may prove the only efficient way to secure the use of this new scientific conquest for the benefit of peace and welfare of man. Concluding, he raises the question why an oath of ethical professional conduct should be asked only of the physician, and proposes that an "oath of conscience" be likewise required from scientists all over the world, by which they would commit themselves never to use their scientific knowledge for the extermination of human beings.

The Metabolism of New Scientific Information: A Preliminary Report. RICHARD H. ORR, M.D. The Georgetown Medical Bulletin, Vol. 14, No. 2, pp. 112-117 (Nov.), 1960.

Information is seen as one of the vital nutrients of research; its digestion, absorption, and assimilation by the scientific community may be likened to the metabolism of food by the human body. Some of the methodology developed for studying biological metabolism, therefore, might also prove useful when investigating the fate of scientific information. Some preliminary observations suggest that the individual research report, or "paper," presented at a scientific meeting might play the same important role in the study of scientific information processes as the use of "tracers," or "tagged" substances does in the study of biological metabolism. To explore the feasibility and value of such a use of research reports questionnaires were sent to the authors of 463 papers presented or "read by title" at two important meetings for cardiovascular and endocrine research workers. Preliminary findings indicate that, of the 60 per cent of authors responding, about one-third submitted their papers for publication before, or within 6 months after, the meeting. Less than 60 per cent of the papers on which the follow-up is complete were published within 2 years. Although the study is not completed and a sample of the authors must be interviewed before a detailed comprehensive analysis of the data can be made, the following conclusions may be drawn tentatively: (1) The factors determining whether and how soon an oral report is published depend more on the personal characteristics and working conditions of the author than on the quality of the work or the selection and publication delay by journals. (2) The similarity of findings in this study of biological research reports with available data on reports in the physical sciences indicates that there is a number of important common features in the metabolism of all new scientific information. (3) The method of using oral research reports as "tracers" to study the fate of new scientific information is practical and useful.

The Use of the Project Method in Integrated Teaching. ALEXANDER ROBERTSON, M.D. Le Journal de l'Association Médicale Canadienne, Vol. 83, No. 21, pp. 1100-1102 (Nov. 19), 1960.

The "Third Year Study Project" at the Univ. of Saskatchewan Department of Social and Preventive Medicine is a

group exercise, under the supervision of faculty (from this and all clinical departments), which takes place during the 16-week period of social and preventive medicine training third-year students undergo at that School. The stated objectives of the program are: (1) to encourage the student to ascertain and describe means of preventing disease; (2) to sharpen his awareness of sociological problems associated with disease and to relate these to his clinical experience; (3) to help him understand the role of the family doctor in the "health team;" (4) to help the student to become familiar with the application of the epidemiological method in the study of disease prevention. The methods applied in the project are as follows: Each group of three to five students is asked to select one subject from various reference material suggested to them, in order to produce a report which will answer a series of questions raised by the faculty supervisors and which should come as near as possible to giving a complete picture of the disease concerned, from the *social* point of view. The completed report is presented by each group to the whole class. Most of the tropics are concerned with diseases which are identifiable in the International Classification of Diseases and Causes of Death (e.g., diabetes mellitus, glaucoma, leukemia, mongolism, radiation hazards, etc.), but sometimes subjects are chosen which are more in the nature of "social problems," such as, for instance, "illegitimacy." To each group the same list of ten basic questions is presented which they will attempt to answer in relation to their particular topic. The questions follow a certain pattern designed to cover all the different aspects of the chosen subject. Some are concerned with the unearthing of social and epidemiological information; others attempt to establish a link between this kind of study and the clinical practice to which the students have been exposed so far. Question no. 8 ("In the course of your investigation you will have read many studies relevant to this disease. Criticize the methodology used in these studies") deals with one all-too-common fault of medical students and doctors, that of believing everything they see in print, and stresses the importance of alertness to faulty methodology. This project, the author states, is being considered by all those concerned with it during the last 2 years as a valuable new approach to integrated teaching.

The Two Aspects of Science. SIR GEORGE THOMSON. Nature (Supplement), pp. 837-841 (Sept. 3), 1960.

There are two views on the value of scientific endeavor: One considers as its principal justification the results which help increase man's control over nature; the other aims at understanding the nature of things. The latter approach, though often starting out with the study of seemingly trivial details, has led often to the formulation of fundamental concepts. Such concepts, penetrating deeply into the heart of things, are seen as discoveries rather than inventions; they are not merely an exercise of the human mind but represent a reality (often forced on unwilling minds by hard facts, e.g., the quantum theory). These two aspects of science do not, in fact, conflict. The best way to make advances in technology is to understand the fundamental principles. On the other hand, pure science receives a double return from its contributions to technology: (1) a material return (a modern physics laboratory could not work without instruments developed mostly for industrial use); (2) The other, less obvious, reward has to do with the danger of pure science becoming more and more abstract (especially in the higher flights

of theoretical physics). Technology helps check this tendency and re-establish pure science's contact with reality. Although the author stresses the importance of the "idealistic" side of science, in his view science without technology would be incomplete. Also discussed in this paper are some of the ways in which scientific knowledge has influenced, and is influencing, the thought and intellectual climate of our world.

The History of Medicine—A Living Force. GERNOT RATH. Ciba Symposium Vol. 8, No. 3, pp. 105-109 (Aug.), 1960.

Has the history of medicine really anything to tell the practitioners of the modern world? This question is raised by Professor Rath and discussed in the light of past and present developments in medical art and science. To him, history of medicine is a "borderland" science which builds for the physician the bridge connecting his profession with the discipline of philosophy and thus leading toward a genuine *studium universale*. Only through an understanding of its historical connections can the modern physician arrive at a true understanding of medicine. Against this view the argument has been raised that medicine has often accepted old-fashioned, out-dated theories no longer of any use to present times. The author points out, however, that by understanding better the fate even of mistaken theories and speculations of the past, the modern investigator might be in a better position to recognize the prejudices and glib expectations of modern times for what they are really worth: New theories are often no more than the old, discarded theories of tomorrow. On the other hand, one must not overlook the fact that even deviations from the direct path of progress have often led to brilliant, important discoveries at a later stage. In scientific medicine, furthermore, there often occurs a resurrection of theories which have influenced earlier centuries, as in the case of the revival of Cullen's concept of neural pathogenesis (formulated in 1776) through Ricker's *Relationspathologie* (1924) after it had seemed that Virchows *Cellular Pathology* (1858) had abolished all previous concepts of humoral and neural pathology. Beyond the above these considerations, the history of medicine fulfills an important educational function: in this era of fragmentation and specialization it is the only branch of medicine left which still embraces it as an entity. By placing medicine as a historical whole before the consciousness of the physician, it acts as a link between the numerous specialties and thus may counteract the dangers of one-sided approach.

The Struggle for the Basic Reform of the Curriculum of the Department of Medicine, Shanghai First Medical College (translated from an article in *Kuang-ming Jih-pao*, Peiping, 29 May 1960, p. 2); Reports on Developments in Education, Industry and Medicine in Communist China, (U.S. Joint Publications Research Service), pp. 35-45 (July 14), 1960.

This is a report on how teachers and students of Shanghai's First Medical College, under the guidance of Mao Tse-tung's philosophy, achieved a break with the "traditional bourgeois ideology" in medical training and established a radically new curriculum. Dissatisfaction over the lack of quality, quantity, speed, and economy in medical education determined the College, early in 1960, to effectuate a complete change-over in the medical course system. A number of Party members, members of the Young Communist League, and activists in seeking teaching reforms were selected from different medical seminars to or-

ganize the Teaching Reform Sub-Committee. Over a 100 reform plans were submitted through the joint efforts of teachers and students. The Committee, after many heated debates, resolved, however, in accord with the thought of Mao Tse-tung, to set aside the purely professional viewpoint, to study theory first in order to find out "the principal contradictions" in the teaching of medical courses, and then to tackle these by their very roots. After many discussions it was finally discovered that the present unsatisfactory situation in medical teaching was mainly due to the influence exerted by the German theory of cyto-nosology. This theory, the core of which is localization (stressing local treatment and neglecting the relationship of disease to the whole body), applied to the teaching of medicine, had resulted in the division of study courses into minute details, each forming a separate system and lacking links between one another "so that its function is divorced from its form, its foundation . . . from clinical work, and theory is divorced from practice." Therefore, in accordance with the dialectic materialistic viewpoint of the New China, a new curriculum called for the merging of related subjects, with the only divisions, made according to the development of a case in combination with the study of its causes. The Teaching Reform Committee, after a further study of the abstract issues, recognized also that the development of medical science and education was not only closely linked with the current development of science as a whole, but, more important still, was also related to the social system. In a capitalistic society, the report states, knowledge is considered "private property," and education is developed for education's sake, which, in medical education, has led to "disintegration and repetition." Only under a socialistic system is it possible for medical science and education to be considered in its entirety, so that the integration and division of scientific subjects can be carried out at a higher level. On this theoretical basis the "combat force" of the Teaching Reform Committee rapidly drew up a revolutionary plan. Its outgrowth is a curriculum which merges the several subjects related to the study of the normal life of the human body—physiology, anatomy, tissue embryology, and part of biochemistry—into one broad subject: the normal study of the human body. Integrated into this new course are also "prevention and cure of diseases," eighteen former clinical studies and some basic subjects divorced from clinics, and some new contents which reflect current medical achievements. The greatest stress is put on prevention and elimination of diseases, combining modern medicine with traditional medical practice. After over a month of trial enforcement the new curriculum, according to the present report, has produced very good results. It not only solved the old problems of too many courses and too heavy study burden, but also increased time for labor and scientific research. Medical students are now expected to complete their training in 4–4½ years, reaching a higher level than formerly in 6 years. The reform, it is hoped, will also lead to more thorough specialization and elevate the quality of teaching.

NEW BOOKS

KENNETH E. PENROD
Book Review Editor

Abstracts

Key and Conwell's Management of Fractures, Dislocations, and Sprains. By H. EARLE CONWELL and FRED C. REYNOLDS. 7th ed. St. Louis: C. V. Mosby Company, 1961. 1129 pp. 1227 illustrations. $27.00.

In the seventh edition of this book Dr. Reynolds, who was associated with Dr. Key and is now his successor at Washington University School of Medicine, is participating as co-author. It is not the purpose of this book to present an encyclopedia of injuries and their treatment. Rather, emphasis is placed on selective injuries, and sound methods used in their treatment have been described. This edition has been thoroughly revised. Much repetitious and obsolete material has been eliminated. More detailed discussions of deceleration injuries and spinal disc involvement have been included. A discussion of treatment with the medullary nail has been presented, and indications for its use, based on thorough investigation, have been included. Also, the use of the hip prosthesis has been discussed. The text and illustrative material have been presented in such a way that the book will be of great use to the general practitioner, the medical student, the general surgeon, the orthopedist, medical personnel in the military forces, and even members of the legal profession. The book is divided into two parts: Part I, Principles and General Aspects; Part II, Diagnosis and Treatment of Specific Injuries.

Orthopaedia. By NICOLAS ANDRY. A Facsimile Reproduction of the First Edition in English, London, 1743. Philadelphia: J. B. Lippincott Company, 1961. 2 Vols. Boxed. $10.00.

This facsimile reproduction of the first English edition of Andry's great work has been accomplished by photo-offset, thus providing the most exact reproduction possible of the 1743 edition. It was in this book that Dr. Andry planted the seed of a great surgical specialty. The Association of Bone and Joint Surgeons has undertaken the sponsorship of this replica. The book, in two volumes, should be a treasure for every orthopedic surgeon. It contains many basic concepts of observations of pathologic states of the musculoskeletal system that have stood the test of time and form the hard core of the principles of orthopedic surgery. Dr. Andry was the coiner of the word "orthopedie." However, to the orthopedic surgeon Dr. Andry contributed much more. This small, well-done, boxed, two-volume set makes a handsome collection.

Congenital Deformities. By GAVIN C. GORDON. Baltimore: Williams & Wilkins Co., 1961. 122 pp. $8.50.

The impelling interest of the author of this work was the etiology of congenital deformities. Starting with the etiology of club foot the work progressed through many steps to a detailed explanation of the mechanism of the etiology of congenital deformities of the hip. This forms the core of the book. The questions of bone growth and repair led eventually to incorporation of work on bone. In addition, attention has been focused on an explanation of spasticity and mental processes.

Atlas of Obstetric Technic. By J. ROBERT WILLSON. St. Louis: C. V. Mosby Co., 1961. 301 pp. Regular ed., $12.50; deluxe ed., $14.50.

In contrast to the several excellent textbooks and atlases available to the gynecologist, there are few comparable publications for the obstetrician. This book has been prepared specifically to fill this gap for those who find themselves in need of a ready reference to consult for an unusual problem of labor and delivery. Since this book is intended to serve as a guide to the management of normal and abnormal labor and delivery and not as a basic text for medical students, certain assumptions concerning background of the reader have been made. The concentration is primarily upon the maneuvers which may be necessary to complete delivery at or near term. The section devoted to normal labor and delivery is extensive; the general management of the laboring patient from her admittance to the hospital until she is delivered is described in some detail. The possible mechanisms of spontaneous delivery are also described for most of the various abnormal positions and presentations of the fetus, and with this as a base the technics for operative extraction are presented.

Essential Urology. By FLETCHER H. COLBY. 4th ed. Baltimore: Williams & Wilkins Co., 1961. 596 pp. $8.00.

The fourth edition of this text shows significant changes. It has been shortened and rearranged to make the book more suitable for students, interns, and residents. References to the literature have been brought up-to-date, and all chapters have been critically reviewed. Like the previous editions, the book presents the essential facts of the embryology, anatomy, physiology, and diseases of the genito-urinary organs. Basic principles have again been emphasized, particularly gross and microscopic pathology, renal physiology, and methods of examination and diagnosis. The book is based upon urology as practiced at the Massachusetts General Hospital. The book should be useful in preparation for the examinations of the Board of Urology, as well as helpful to the general surgeon and the general practitioner.

Treatment of Silent Prostato-Vesiculism in General Practice. The Reflex Manifestations and "The Therapeutic Test." By ELIAS L. LEIKIND and HARRISON C. HARLIN. New York: Julian Press, Inc., 1961. 283 pp. $9.50.

This book is written in response to the need for thorough, competent, practical instruction in the diagnosis and treatment of disorders of the prostate and seminal vesicles so that the general practitioner as well as the specialist may treat these organs by proper and effective palpation, massage, and stripping. It deals with the relationship between subjective and objective complaints and locally asymptomatic prostatovesicular disease. The authors describe methods of history-taking and rectal examination which add precise diagnostic significance to the interpretations of vague and unexplained symptoms. In addition there is contained a comprehensive review of the more important papers dealing with genito-urinary dysfunction in relation to organic and so-called functional disease.

Textbook of Physiology. By W. W. TUTTLE and BYRON A. SCHOTTELIUS. 14th ed. St. Louis: C. V. Mosby Co., 1961. 521 pp. $7.00.

This book is a direct descendant of the first edition published in 1916 by Dr. Zoethout. With the passing of Dr. Zoethout in 1959, the responsibility for the preparation of the fourteenth edition has fallen to the present authors. In this edition an attempt has been made to include most modern concepts of human physiology. To this end the chapters on muscle and nerve have been rewritten. Much new material has been included, and old material has been deleted. Many new tables have been added, including those dealing with blood pressure, nutrition, and body weight. The new concept of ideal weight is presented. Numerous old figures have been redrawn and new ones added. The text material has been reorganized in a more logical sequence to facilitate its teaching and understanding.

Clinical Pharmacology. By D. R. LAURENCE and R. MOULTON. Boston: Little, Brown & Co., 1960. 461 pp. $10.00.

This book is intended primarily for medical students in their clinical years and for those newly qualified, for it is hoped that this survey of the principal drugs, with details of their use in pharmacology, may be helpful to some postgraduate students and general practitioners. Most books of moderate size confine themselves to discussing either basic pharmacology or practical therapeutics without much discussion of the other phase. This book is offered as a reasonably brief solution of the problem of combining practical clinical utility with some account of pharmacology. No attempt has been made to supply a complete bibliography, but references are given at the end of each chapter. Nonproprietary drug names and the metric system for dosage are used throughout. The index includes an inevitably incomplete range of proprietary names.

Dunham's Premature Infants. By WILLIAM A. SILVERMAN. 3rd ed. New York: Paul B. Hoeber, Inc., 1961. 558 pp. $15.00.

In the first two editions of this book Dr. Dunham declared her intention that the book should "serve as a source of information in regard to prematurity and as a guide for the general care of the premature infant." The present author intends to continue that philosophy. This third edition has increased appreciably in size. The basic organization of the book has, however, been retained. Part I deals with general, Part II with clinical, and Part III with public health considerations. However, Part II has been divided into two sections. Section A includes seven chapters dealing with the care of premature infants beginning with perinatal aspects and ending with a discussion of the problems encountered after discharge from the hospital. Section B comprises eleven chapters describing the abnormal conditions (including diagnosis and treatment) that occur most frequently in premature infants during the first months of life. The references have been slanted toward reviews of specific subjects.

Introduction to Dental Anatomy. By JAMES HENDERSON SCOTT and NORMAN BARRINGTON BRAY SYMONS. 3rd ed. Baltimore: Williams & Wilkins Co., 1961. 374 pp. $9.00.

This whole text has again been carefully revised and the order of presentation slightly rearranged. The new material has been added with the intention of emphasizing the functional unity of the masticatory apparatus. Approximately ten new illustrations have been added, and a number of the previous figures have been replaced or modified. The text reflects the feeling of the author that a textbook in this subject not only should give information on the structure and development of the dental tissues but also should attempt to correlate the tissues which make up a tooth with the functions in which the tooth, the mouth cavity, and all its parts are concerned in the activities of the body.

A Stereoscopic Atlas of Human Anatomy—Section V, The Abdomen. By DAVID L. BASSETT. Portland, Oregon: Sawyer's, Inc., 1961. In 2 vols. 295 pp. $16.50.

The first four published sections of this new and interesting approach to the study of human anatomy contains 924 separate 3-D full color views with 38 radiographs. When complete, the Atlas will cover thoroughly the gross anatomy of the entire human body and will consist of eight sections containing approximately 1,600 separate views, 25 volumes, and 3,200 pages of labeled drawings and explanatory text. The 3-D colored transparencies are mounted in View-Master reels and stored within the covers of the accompanying volumes of the text and line illustrations. Every reel shows the clear, full-color, beautifully illuminated details of seven step-by-step dissections of human material. Each sequence of dissection is done on the same specimen. Each separate stereoscopic view is keyed to a labeled drawing in the text. The keyed drawing includes dimensions and descriptions for position and rapid identification of each structure. All structures are labeled, and each section is provided with an index.

Management of Hypertensive Diseases. By JOSEPH C. EDWARDS. St. Louis: C. V. Mosby Co., 1960. 420 pp. $15.00.

This book is intended to serve as a guide to the practical management of the patient with hypertensive disease and is written for the physician in practice. It is a feeling of the author that it is important to know what drugs to use and when to use them, but it is equally important to know what not to do. Although an understanding of the physiology and chemistry of the neurocirculatory system is important in the field of hypertensive disease, it is not within the scope of this book to go into detail about such mechanisms. However, a review of the experimental work and clinical studies of therapy in recent years has been included. This book represents the bringing together in one place many of the methods and observations a physician has found of value in his own experience.

Haematology. By R. B. THOMPSON. Philadelphia: J. B. Lippincott Company, 1961. 296 pp. $6.00.

This book is intended to present a readable account of disorders of the blood and blood-forming organs; it is more comprehensive than the corresponding sections in textbooks of general medicine, but very much shorter than the major texts on hematology. The emphasis throughout is clinical, although, of necessity, some mention has been made of morphology, this has been as brief as possible. The colored illustrations in this book are intended only as a guide to the reader and have been designed to emphasize the essential features of the more important cells discussed in the text. For lack of space, technical procedures have been omitted. Some subjects, such as haemolytic disease of the newborn, are dealt with in more detail than is usual in haematology textbooks. Wherever possible the simplest and most informative names have been used.

Systemic Lupus Erythematosus. By DANIEL L. LARSON. Boston: Little, Brown & Co., 1961. 205 pp. $7.50.

This monograph is a review of current knowledge of the clinical, laboratory, and pathologic features of systemic lupus erythematosus. It includes an analysis from the manifestations found in 200 patients who came under observation at the Presbyterian Hospital in New York City over the past 20 years. Throughout the book, case histories are scrutinized in an attempt to arrive at general conclusions concerning the natural history of the disease, its chronicity, clinical manifestations, laboratory features, treatment, and relationship to such other disease states as Rheumatoid arthritis. Detailed discussions are included on the effects of pregnancy, neuropsychiatric manifestations, and the circulating lupus erythematosus cell factor.

The Art of Clinical Instruction—Medical and Surgical Nursing. By LILLIAN A. SHOLTIS and JANE SHERBURN BRAGDON. Philadelphia: J. B. Lippincott Company, 1961. 217 pp. $5.75.

The purpose of this book is to present the broad responsibility which belongs to the teacher of medical and surgical nursing and to help her to discharge this responsibility more effectively. The authors are fully aware that there are almost as many ways of teaching this course as there are schools of nursing. Flexibility and the thorough coverage of changing concepts in teaching and learning keynote this book. It is broad enough in its scope to serve effectively in conjunction with almost any type of course or textbook. The appendix contains an up-to-date vocabulary in medical and surgical nursing for ready reference. In addition, the appendix lists many helpful pamphlets and other illustrative materials including film sources and bibliographic material.

Study Guide for Clinical Nursing. A Coordinated Survey Integrated with Essentials of the Basic Sciences. Edited by EMILY C. CARDEW, with six collaborators. 2nd ed. Philadelphia: J. B. Lippincott Co., 1961. 534 pp. $6.50.

The purpose of this edition remains the same as for the first: to present a method

of organizing material which will help students to synthesize and to apply the principles of the biologic, the physical, and the social sciences in understanding and meeting the individual patient's needs. This edition is an attempt to make the book even more helpful to students and instructors in approaching the problem-solving method in patient care. Changes have been made to facilitate its usefulness as a tool for more effective learning. Each major section and each unit has been preceded by an overview. Many major changes have been made, based on experiences with the first edition. The new material represents an extension of the content of the first edition rather than a revision of outdated material.

Personal and Vocational Relationships in Practical Nursing. By CARMEN F. ROSS. Philadelphia: J. B. Lippincott Co., 1961. 204 pp. $1.95 (paper-bound), $3.25 (cloth bound).

This book is addressed to the practical nurse from the author's conviction that human relationships established by the nurse can in many instances be more important than her technical skill. The well being of the patient is the ultimate concern of the nurse, and the contents of this book have been chosen to help the practical nurse directly or indirectly to achieve that end through improved human relationships. Such things as a brief history of nursing, the nursing team, a look at the nurse herself, ethical and legal responsibilities, available organizations, and career opportunities are included.

Recent Advances in Human Genetics. Edited by L. S. PENROSE, assisted by HELEN LANG BROWN. Boston: Little, Brown & Co., 1961. 189 pp. $8.00.

The rapid development of the subject of human genetics over the past decade has been made possible by the application of a variety of special techniques. This book has not attempted to cover with equal competence an account of new work in all fields, but certain aspects have been selected for detailed presentation. It is hoped that this presentation will whet the reader's appetite for descriptions of other parts of the subject elsewhere. The largest omission is concerned with human biochemical genetics, but this subject has been recently covered in other treatises. Knowledge of chromosomes has been presented here by Dr. Harnden, problems of the genetics of sex are explained by Dr. Miller, biochemistry, in one of its more significant genetic aspects, is dealt with by Dr. Gerald in his chapter on hemoglobins. Some new work on quantitative genetics is described by Sarah B. Holt. A mathematical treatise concerning the order of genes in chromosomes is written by Dr. Renwick, and modern methods of statistical analysis are presented by Dr. Smith. Likewise included are accounts of mutation and malformations.

Synopsis of Oral Pathology. By S. N. BHASKAR. St. Louis: The C. V. Mosby Company, 1961. 492 pp. $9.75.

Another in the now familiar "Synopsis" series, this book is a summary of oral pathology written specifically for the dental practitioner and dental student. Part I classifies oral lesions according to their clinical appearance. Part II represents a distillation of what is known about oral pathology. The discussion is subdivided into general principles of oral pathology, pathology of the teeth and jaws, pathology of the oral mucosa and tongue, pathology of the salivary glands, and special oral pathology.

An Introduction to the Experimental Method. For Students of Biology and the Health Sciences. By J. MAXWELL LITTLE. Minneapolis: Burgess Publishing Company, 1961. 82 pp. $3.00 (paper bound).

Like many who have tried to teach the elements of statistical methods to medical students, the author has experienced dissatisfaction with available textbook material and has been forced to write his own. The purpose of this book is to introduce, in an elementary manner, to students of biology and its more restricted specialties such as medicine, the principles of the experimental method with particular emphasis on some of the simpler and most

frequently used statistical concepts. No prior knowledge of statistics is assumed, and statistical theory is not discussed, except in the broadest sense. The mathematical manipulations are limited to arithmetic and the simplest of algebraic expressions, Also, an attempt has been made to translate the specialized vocabulary of statistics into terms commonly understood. Included are tables of "*t*," Chi Square, F values, and a Table Relating Correlation Coefficients to Probability.

Rorschach's Test. I. Basic Processes. By SAMUEL J. BECK, EUGENE E. LEVITT, ANNE G. BECK, and HERMAN B. MOLISH. 3rd ed. New York: Grune & Stratton, 1961. 234 pp. $6.00.

This edition continues as its purpose the laying of the foundation for sound, normative method in using the Rorschach test for the study of personality. Revision has been extensive. The book is primarily written for the new student in the field, but, owing to the many changes in this edition, will likewise be of considerable interest to the more experienced student.

Psychotherapy with Schizophrenics — A Reappraisal. Edited by JOSEPH G. DAWSON, HERBERT K. STONE, NICHOLAS P. DELLIS, with 12 contributors. Baton Rouge: Louisiana State University Press, 1961. 153 pp. $5.00.

The original papers and discussions comprising this volume represent the major portion of the first symposium sponsored by the Department of Psychology at Southeast Louisiana Hospital. As well as the formal papers and discussions, each session of the symposium included general participation from the audience. The present volume contains six major papers, prepared comments upon the papers, and an epilogue summing up the general discussion periods. This book is not intended to be a comprehensive textbook of psychotherapy but should be regarded as a sampling of thought and attitude from men who are actively engaged in this work.

The Training of Psychotherapists—A Multi-Disciplinary Approach. Edited by NICHOLAS P. DELLIS and HERBERT K. STONE, with 16 contributors. Baton Rouge: Louisiana State University Press, 1961. 192 pp. $5.00.

This symposium came about through an effort to give clinical psychology interns an introductory experience in psychotherapy. This symposium brings together a group of people representing different professions (psychiatry, clinical psychology, and social case work) and different schools of thought, who are also intimately involved in the training of psychotherapists. Because of its interdisciplinary approach, this book will interest not only the psychiatrist and the clinical psychologist, but also those involved in psychotherapy in its broader sense, such as social workers, counselors, guidance officers, and ministers.

Emotional Problems of the Student. By GRAHAM B. BLAINE and CHARLES C. MCARTHUR, with 12 contributing authors. New York: Appleton-Century-Crofts, Inc., 1961. 248 pp. $4.95.

This collection of articles describing the psychiatric problems of students and the manner in which they are dealt with by a university health service is presented partly in answer to the question of why a college needs a psychiatrist. The material is presented in a language easily understood by educators and teachers regardless of their knowledge and experience in the fields of psychiatry and psychology. At the same time the material should be of value and interest to members of the medical and psychiatric profession, particularly those dealing with students.

The Ego and the Id. By SIGMUND FREUD. (Newly translated from the German and edited by James Strachey.) New York: W. W. Norton and Company, Inc., 1961. 88 pp. $3.75.

This is an all new translation of this book, the last of Freud's major theoretical works. The American edition has just become available.

The Psychotherapy Relationship. By WILLIAM U. SNYDER. New York: Macmillan Company, 1961. 408 pp. $7.50.

This book has three principal aspects. First, it is a report of a 4-year research project on the psychotherapy relationship. Second, it is an analysis and discussion of a great deal of relevant psychological literature on the topic of the psychotherapy relationship. Finally, it is a presentation of a sizeable amount of case material demonstrating methods employed in an eclectic type of psychotherapy focused around the interpersonal relationship between the therapist and the client. Three groups of persons will find this book useful: those who do professional counseling, student therapists or counselors-in-training, and those conducting research on the nature of psychotherapy.

The Couch and the Circle — A Story of Group Psychotherapy. By HYMAN SPOTNITZ. New York: Alfred A. Knopf, 1961. 274 pp. $4.50.

The origins, methods, importance, and future of group psychotherapy is the subject of this book. It was written to acquaint the layman and the specialist in allied fields with the nature of this form of treatment. Possibly, the book will also help some readers prepare for the reality of the experience. It is a nontechnical exposition of group treatment which subordinates theoretical concepts and techniques to impressions of human beings working together.

Information, Please! For Women Only. By ALFRED DREYFUS, II. New York: Vantage Press, 1961. 556 pp. $7.50.

Although the main feature of this book is the Dunhill Chart, which presents in complete detail what times during the menstrual cycle a woman is or is not likely to become pregnant, this book also offers a wide range of information on virtually every subject that has to do with female hygiene and sexual disorders. The book is written for the layman.

The Conquest of Pain — Achievements of Modern Anaesthesia. By RONALD WOOLMER. New York: Alfred A. Knopf, 1961. 420 pp. $4.50.

This book is directed to the layman and presents a complete and absorbing account of anesthesia's latest achievements.

A Synopsis of Contemporary Psychiatry. By GEORGE A. ULETT and D. WELLS GOODRICH. 2d ed. St. Louis: The C. V. Mosby Company, 1960. 297 pp. $6.50.

As with the first edition, this handbook was written to fill the need for a brief, introductory text of psychiatry as a quick reference for psychiatric residents, medical and psychological interns, medical students, nurses, and others whose work in the psychiatric clinic and hospital may be for a brief period of time. With these workers in mind, the book has been made small enough to fit in the side pocket of the clinic coat. It has been written also for the general practitioner who is having his attention increasingly directed to the psychological problems of his patients. Advances in psychiatric treatment have made necessary considerable revision of the section on therapy in this edition. The recent discoveries in psychopharmacology have produced new opportunities and new therapeutic problems, which it is hoped will be clarified by the tabular information on the psychotropic drugs. An effort has been made to maintain the intended eclecticism of the original edition.

Milestones in Microbiology. By THOMAS D. BROCK. Inglewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961. 275 pp. $3.95 (paper-back).

This is not a history of microbiology. This collection of articles supplements the work done by undergraduate students in their first year of microbiology. It is further intended to be an interesting and useful reference for advanced students and for practicing microbiologists. Microbiology developed into a science almost exclusively during the 19th century. The important research papers are therefore published predominantly in German and French, with a few in English. These have been translated into English by the author. Almost all the articles have had to be abridged in some way to keep the size of the book within reasonable limits. The articles selected for this volume have been carefully chosen. In most cases the selection of a specific article was obvious. Selection has been guided by a consideration of the educational value of

the article, as well as its ability to stand alone.

The Integrative Action of the Nervous System. By SIR CHARLES SHERRINGTON. (A Yale paper-bound edition.) New Haven: Yale University Press, 1961. 400 pp. $1.95.

A paper-bound edition has just been published of this classic work first published in 1906. Included is the foreword prepared by the author for the second printing in 1947.

Lectures on the Scientific Basis of Medicine. Vol. 8, 1958-59. British Postgraduate Medical Federation, University of London. New York: Oxford University Press, 1961. 467 pp. $10.50.

Each year the British Postgraduate Medical Federation arranges a series of lectures on subjects that illustrate the use of new methods and the progress taking place. The lecturers are themselves actively engaged in research, and the lectures are designed for graduates in medicine and dentistry looking forward to careers as clinical specialists as well as for those seeking careers in research in the medical sciences. This volume contains 24 of the 30 lectures delivered during the winter of 1958–59.

Multiple-Choice Examinations in Medicine. A Guide for Examiner and Examinee. By JOHN P. HUBBARD and WILLIAM V. CLEMANS. Philadelphia: Lea and Febiger, 1961. 180 pp. $3.75.

In order for multiple-choice testing methods to be successful, both examiner and examinee need to be familiar with the techniques and pitfalls that may be encountered. This volume has therefore been written for both. It describes the techniques and values of multiple-choice testing. Types of questions that are used in multiple-choice examinations in medicine, and a sample of such questions in the form of a test with a separate key for the right answers, are included. In this volume generous use has been made of the experience of the National Board of Medical Examiners. Of special interest to the examiner is a review of the methods of scoring and detailed statistical analyses which increase the meaningfulness of the grades and provide data which allow for improving the examinations. Also shown are ways in which individuals' scores may be compiled in order to study group performances. The test questions themselves have been taken from actual tests administered by the National Board.

Some Reflections on Genius and Other Essays. By SIR RUSSELL BRAIN. Philadelphia: J. B. Lippincott Company, 1960. 192 pp. $6.00.

In this collection of fourteen essays, Dr. Brain, the well known British neurologist, discusses the intriguing problems arising from a consideration of the causes and the effects of genius. He postulates a difference in physiologic makeup of the brain and nervous system of the genius compared with that of the ordinary individual. The book opens with a concise description of the entire subject of genius; continues with incisive comments on such men of genius as Swift, Johnson, and Dickens; and concludes with essays on "Symbol and Image" and "Words." Many intriguing questions concerning genius are discussed. For anyone interested in the functioning of the human mind, this book will have both immediate and lasting appeal.

The Crisis in American Medicine. Edited by MARION K. SANDERS. New York: Harper and Brothers, 1961. 144 pp. $3.75.

This book is the outgrowth of a special supplement to *Harper's Magazine*, published in October, 1960, on "The Crisis in American Medicine." It includes the eight articles which appeared in that supplement (three of them expanded here to include more recent data) plus three closely related articles which appeared in earlier issues. All were written by acknowledged experts in their fields. The subject matter of these articles has stirred widespread debate and concern. This book is offered in hopes that it may serve as a basis for informed debate by both laymen and doctors. What this book attempts to do is to set forth basic (although often little known) facts on some of the more urgent issues, and to illuminate them with the comments of men whose opinions merit respect.

PUBLICATIONS

of the

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Useful information for both medical educators and students is published by the Association of American Medical Colleges. These publications may be obtained from the Association Headquarters office, 2530 Ridge Avenue, Evanston, Illinois.

BOOKS AND PAMPHLETS

Admission Requirements of American Medical Colleges—1960-61 ($2.00).

History of the Association of American Medical Colleges—1876-1956.

Financial Assistance Available for Graduate Study in Medicine ($2.50).

Medical Schools in the United States at Mid-Century ($4.50).

Education of Physicians for Industry ($2.00).

A Study of Medical College Costs ($1.50).

Medical Education for Foreign Scholars in the Medical Sciences ($1.50).

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TEACHING INSTITUTE REPORTS ($2.00 paperbound, $3.00 clothbound).

Report of the Conference on Preventive Medicine in Medical Schools (Report of the 1952 Institute).

The Teaching of Physiology, Biochemistry and Pharmacology (Report of the 1953 Institute).

The Teaching of Pathology, Microbiology, Immunology and Genetics (Report of the 1954 Institute).

The Teaching of Anatomy and Anthropology in Medical Education (Report of the 1955 Institute).

The Appraisal of Applicants to Medical School (Report of the 1956 Institute).

The Ecology of the Medical Student (Report of the 1957 Institute).

Report of the First Institute on Clinical Teaching (Report of the 1958 Institute).

Report of the Second Institute on Clinical Teaching (Report of the 1959 Institute).

PUBLICATIONS OF RELATED ORGANIZATIONS

Hospitals Participating in the Matching Program 1961 (NIMP).

Results of the Matching Program 1961 (NIMP publication).

The Student and the Matching Program 1961 (NIMP publication).

Medical College Admission Test—Bulletin of Information 1961 (Psychological Corporation).

In addition to the above publications, the American Psychiatric Association, 1700 Eighteenth St., N.W., Washington, D.C., still has available copies of the two Institutes on the teaching of psychiatry: Psychiatry in Medical Education—1951 Conference ($1.00) and the Psychiatrist: His Teaching and Development—1952 Conference ($2.50).

MEDICAL EDUCATION NEWS

from the Medical Schools

Arkansas Names Dr. Shorey as Dean

Dr. WINSTON K. SHOREY, associate dean of the University of Miami School of Medicine, was named dean of the School of Medicine at the University of Arkansas. Dr. Shorey will take over the new post August 1. He succeeds Dr. F. DOUGLAS LAWRASON, former Arkansas dean who resigned several months ago to become executive medical director of Merck & Co. in New Jersey.

DR. WINSTON K. SHOREY

Dr. Shorey received his M.D. degree at the University of Pennsylvania in 1943. He took resident training in internal medicine and clinical pathology at Pennsylvania from 1944-46. In 1947 he joined the Pennsylvania staff as an assistant instructor, and held a Thompson Hawly Fellowship in gastro-enterology. He subsequently was promoted to instructor and to assistant professor before moving to Miami in 1955. At Miami he received promotions to associate professor and to professor of medicine. He became associate dean there in 1957.

Albany

Construction on Albany's new five-story medical science building is now under way, with completion expected in about two years. According to an Albany spokesman, the new structure will almost triple the space currently available at the college for research and teaching purposes.

The addition to the medical college is part of a $13 million capital building program now in progress at the Medical Center. Other phases of the program include a residence for students of the School of Nursing, a dormitory for residents and interns, and an addition to the Albany Medical Center Hospital.

Boston

The National University of Iran, that country's only privately supported educational institution, has invited Dr. JOHN J. BYRNE, professor of surgery and director of the Third Boston University Surgical Service and Research Laboratory at Boston City Hospital, to help formulate the curriculum for its new medical school. According to Dr. Byrne, who left for Iran in June, the president of the Iranian University has

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MEDICAL PHYSIOLOGY is edited and written by 16 of the world's foremost physiologists and educators who are active participants in the dynamic advance of knowledge being made within every sub-specialty of physiology. For example, Mero R. Nocenti, an outstanding leader in the field of endocrinology, has completely rewritten the section on "The Endocrine Glands"; and the well known Christian J. Lambertsen has rewritten the section on "Respiration." In addition, every other section has been revised by equally qualified contributors to give this text an almost newsworthy quality in its review of current physiologic research.

Entirely redesigned in a new, larger two-column typographic format, this handsome new edition is profusely illustrated with 70 additional photographs, drawings and charts which clarify the text matter.

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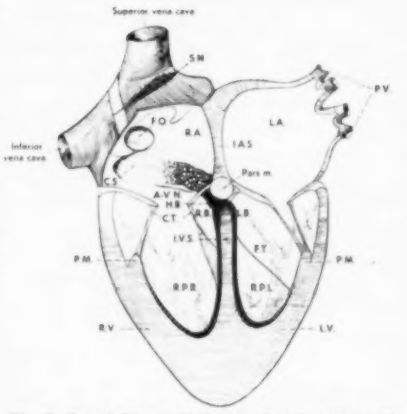

Fig. 9. One of 70 new illustrations in this edition, this diagram demonstrates the location and distribution of specialized nodal and conducting tissue in a human heart. Illustration is reproduced twice this size in the book.

This textbook can help stimulate your students to study, to think about and to understand medical physiology. The volume selects the material the editor and contributors feel is most significant for the elucidation of each sub-specialty and presents it in terms of the experimental procedures which provided it. No attempt is made to minimize controversial matters or others about which it is necessary to suspend judgment at this time.

Edited by PHILIP BARD, Professor of Physiology, The Johns Hopkins University. With 15 collaborators. Ready in August. 11th edition, approx. 1185 pages, 7¼" x 10½", 508 illustrations, 4 in color. About $16.50.

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indicated interest in Boston University's new unified six-year program of college and medical school education which will go into effect this fall. Undertaken so that better physicians can be trained in less time, the six-year plan will eliminate two full years from the traditional eight-year undergraduate and graduate education of medical students.

The new National University of Iran now offers major study in business administration and architecture. The addition of a medical school curriculum will make possible the education of doctors within their own country and at the same time alleviate the shortage of physicians to care for the peoples of Iran and other Eastern countries.

The School of Medicine dedicated its new George and Beatrice Sherman Laboratory for Research in Stomatology recently. To be used for basic research in diseases of the mouth, the new laboratory will be furnished and equipped with funds given to the university by Boston philanthropist George Sherman. In addition to the built-in laboratory furnishings, the Sherman gift will also make possible the initial equipping of the laboratory. The new laboratory will enable the department of stomatology to enrich its teaching and provide adequate facilities for basic research and correlated clinical-basic research.

Buffalo

Dr. FLOYD R. SKELTON, former associate professor of pathology at Louisiana State University School of Medicine, has been named professor and chairman of the department of pathology.

A native of Canada, Dr. Skelton came to this country in 1952 as a trainee of the National Cancer Institute, serving in the department of pathology and oncology at the University of Kansas. He went to the Medical College of Georgia in 1954 as assistant professor of pathology before assuming his position at Louisiana State University.

U. of Chicago

The university's new Goldblatt pavilion, which will serve as the diagnostic clinic for the school's medical facilities, was dedicated recently and is now in full operation. The $1,480,000, three-story structure is designed to handle 175,000 out-patients who are treated annually at the medical center.

Cincinnati

Three members of the UC faculty have departed for Liberia to survey the possibilities, and establish tentative objectives, for paramedical training in that country. The group's participation was requested by the International Cooperation Administration of the U.S. Government with the approval of the Republic of Liberia. Members of the team include Dr. JOHN J. PHAIR, professor of preventive medicine, and DONALD C. BRUEGMAN, business manager, Kettering Laboratory, both of the department of preventive medicine and industrial health, and Miss LORENE M. WARWICK, assistant professor of the College of Nursing and Health. The Medical Center team plans to determine more precisely medical personnel needs in Liberia. They will work with U.S. Operations Mission and Liberian government authorities in devising long-range training objectives for the Tubman National Institute of Medical Arts. Far-reaching improvements in health conditions in Liberia—with benefits reaching into other parts of Africa—are expected eventually to result from studies of the team.

Dr. JOSEPH A. FREIBERG, associate professor of surgery, took office as president of the American Orthopedic Association during the group's annual meeting in May—exactly fifty years since his father served as president of the same organization. Dr. Freiberg has been director of the orthopedic surgery

division at the College of Medicine since 1938. His father, the late Dr. ALBERT H. FREIBERG, preceded him as director of that division and in 1911 was president of the AOA.

Colorado

The Medical Center has been awarded a grant of $260,000 by the Division of General Medical Sciences of the NIH for a general clinical research center. The grant, one of 13 announced by Surgeon General Luther L. Terry, will be used for the creation of a new eight-bed unit in the Colorado General Hospital. The research unit will be under the direction of Dr. DALTON JENKINS, associate professor and head of the division of endocrinology in the department of medicine. An interdepartmental committee of clinical faculty members will work with Dr. Jenkins in the administration of the program.

The new University Hospital, which is to be constructed late this year, is to include an 18-bed clinical research ward for continuation of the program.

Duke

Four members on Duke's medical faculty have been promoted to the rank of full professor. Dr. ALBERT HEYMAN was named professor of neurology; Drs. JAMES B. WYNGAARDEN, HERBERT O. SIEKER, and E. HARVEY ESTES were named professors of medicine. Active in clinical and basic research, the professors have contributed numerous articles to scientific publications and are members of leading professional organizations.

D. J. E. MARKEE, James B. Duke professor of anatomy and department chairman, has been chosen chairman-elect of the Council on Medical Television. Dr. Markee was elected during a meeting of the Council at the National Institutes of Health. He will take office a year from now, succeeding Dr. JOHN HUBER, chairman of the anatomy department at the Temple University Medical School. A Duke faculty member since 1943, Dr. Markee is known as a pioneer in the production of motion pictures for medical teaching purposes. He is assistant dean in charge of admissions of the medical school and also is head of the university's long-range planning committee.

Georgetown

The Medical School, under a grant received from the National Institute of Mental Health, will have a three-year residency program in psychiatry available for one qualified physician who is currently in general practice or in some specialty other than psychiatry. The program offers a yearly grant of $12,000 during each of the three years of residency starting July 1, 1962. Applications are to be submitted by August 1, to Dr. RICHARD A. STEINBACH, Georgetown University Medical Center.

Harvard

Two professors who served on the faculty for a total 71 years, retired this month to become emeritus professors. They are Dr. JAMES CLARK WHITE, professor of surgery, and Dr. FULLER ALBRIGHT, professor of medicine. Since his graduation from Harvard Medical School in 1923, Dr. White has devoted his professional life at Harvard and the Massachusetts General Hospital. Dr. Albright, an endocrinologist, joined the staff of the Harvard Medical School and that of the Massachusetts General Hospital in 1928.

Dr. MAHLON B. HOAGLAND, associate professor of bacteriology and immunology, was named the first Ruby Boyd Miller Fellow in Medical Research. The fellowship, established with an initial gift of $109,123 from the estate of Mrs. Miller, will provide support for a researcher in the field of science "hope-

fully with a focus on cancer research." Dr. Hoagland, who received his M.D. degree from Harvard in 1948, has devoted his studies to protein synthesis and to diseases involving abnormal growth (as cancer).

Illinois

Dr. WILLIAM J. GROVE, associate professor of surgery, has been named associate dean of the College of Medicine. He assumed his new position July 1. Dr. Grove replaces Dr. WILLIAM F. KELLOW, who resigned his position to become dean of the Hahnemann Medical College.

Dr. Grove received his medical degree from the University of Illinois and came to the university as instructor in surgery in 1951. He became assistant professor in 1952 and associate professor in 1954. He is also on the staff of Presbyterian-St. Luke's Hospital.

Iowa

GERHARD HARTMAN, professor and director of the graduate program in hospital administration, took office as president of the Association of University Programs in Hospital Administration at the group's annual meeting recently at Fort Sam Houston, Texas. He succeeds Col. GLENN SMITH of the Army Brooke Medical Service School.

The Association, established in 1948, is made up of members from institutions of higher learning that offer graduate education in hospital administration. The University of Chicago started the first hospital administration program in 1934.

Dr. DEAN M. LIERLE, professor and head of the department of otolaryngology and maxillofacial surgery, was named president of the American Laryngological Association at the organization's annual meeting May 21 at Lake Placid, N. Y.

Kansas

A personnel exchange agreement between the medical schools of the University of Kansas and the University of the Philippines will begin this fall. Funds to support the program for its first year have been provided by the China Medical Board of New York, Inc.

The exchange will involve undergraduate medical students, graduate students in the basic science departments, resident physicians in clinical training and faculty members at all levels. Two students from each classification and two faculty members will be exchanged during the first year. Periods of exchange will range from three months to a year for students. At the faculty level, it is anticipated that the period would not be less than nine months for junior staff members and no shorter than two months for senior members.

Louisville

Dr. GLEN SPURLING, professor of neurosurgery for 35 years and since 1947 chief of the department, which he organized, is retiring this summer. In recognition of his service to the community and to the university, "Glen Spurling Day" was celebrated May 20, first academically by a series of addresses by his colleagues, and later by a banquet.

Marquette

A $200,000 grant has been made to the medical school to establish a research center at the County General Hospital for intensive study of patients with difficult disease problems. The grant was awarded by the Public Health Service to Dr. WILLIAM W. ENGSTROM, director of medicine at the hospital, and professor and chairman of the department of medicine at the medical school. The research center will be a 10-bed unit where patients will receive special care from the center's staff. About 17 additional nurses, dietitions, technicians and other medical personnel will be hired. A spe-

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cial laboratory already has been completed. Dr. EDWARD J. LENNON of the department of medicine will become director of the center program in July. The center will be under the department of medicine's jurisdiction and will operate under the general administration of the hospital.

Dr. CHARLES F. MATTINGLY, assistant professor of obstetrics and gynecology at Johns Hopkins University Medical School, has been appointed professor and chairman of the department of obstetrics and gynecology at Marquette. He will take over his new duties in July, succeeding Dr. ROLAND S. CRON.

Miami

Dr. ROBERT B. LAWSON, professor of pediatrics and chairman of the department, took office July 1 as interim dean of the School of Medicine. He will hold this position until a new dean is appointed and installed. Lawson succeeds Dr. HOMER F. MARSH, who left the campus on July 1 to become vice-president of the University of Tennessee in charge of medical units. Dr. Lawson holds A.B. and M.D. degrees from Harvard and had his hospital training at Strong Memorial Hospital, Rochester, and Johns Hopkins Hospital, Baltimore. In 1942 he organized the department of pediatrics at Bowman Gray School of Medicine and served there until 1954, when he became professor and chairman of that department in Miami.

A bi-lingual conference on occupational medicine and toxicology, sponsored by the Universities of Miami and Puerto Rico, will take place in Miami Aug. 6-10. Approximately 35 specialists in the field of occupational medicine from half a dozen Latin American countries and the United States will present papers on subjects ranging from radiation and space medicine to air pollution and toxicology. Some papers will be delivered in English and some in Spanish, with simultaneous translation provided in either case. Dr. WILLIAM B. DEICHMANN, professor of pharmacology at Miami, is chairman of the conference. Dr. JOSÉ R. VIVAS, dean of the Puerto Rico School of Medicine, has collaborated in setting up the program.

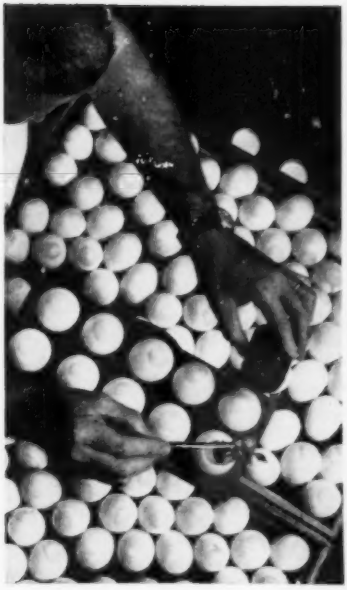
Nebraska

A $1,745,000 grant from the National Institute of Mental Health will be used by the College of Medicine to establish a research center for the study of mental retardation at the Nebraska Psychiatric Institute. The center will use existing facilities at the Institute, but a new metabolic laboratory will be built. According to Dr. CECIL WITTSON, director of the Institute, the program will be three-fold: To achieve a better understanding of the cases of mental retardation; to develop and refine preventive, diagnostic, and treatment procedures; and to develop a rapid application of the results of research.

Oregon

Three associate professors are among the new full-time faculty members recently named to the Oregon Medical School staff. Dr. RICHARD L. DOBSON, former assistant professor and head of the dermatology division at North Carolina School of Medicine, joined the Oregon faculty July 1 as associate professor of dermatology. Dr. ROBERT E. SWANSON, former assistant professor at the University of Minnesota Medical School, joined the faculty June 1 as associate professor of physiology. A third associate professor, Dr. JAMES METCALFE, now doing research at Tubingen University Medical School in West Germany, will arrive in mid-July to fill the Oregon Heart Association chair of cardiovascular research.

Dr. J. ENGLEBERT DUNPHY, professor and chairman of the surgery department, was elected 1961-62 president of the American Surgical Association.



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1. J. Lab. & Clin. Med., 45:679, 1955. 2. J.A.M.A., 173:333, 1960.
3. New England J. Med., 263:1058, 1960.

148000

Pennsylvania

A research professorship in memory of Dr. MATTHEW J. WILSON, Philadelphia physician and civic leader, has been established at the university. The new chair, to be known as the Dr. Matthew J. Wilson Professorship in Research Radiology, was made possible by gifts having a present value of more than $500,000, which were received from Dr. Wilson's son and daughter. According to university president GAYLORD P. HARNWELL, the establishment of the professorship will enable the School of Medicine to increase substantially its research work in radiology and the training of technicians in this field.

Pittsburgh

The School of Medicine is trying a new approach toward studying rheumatic and orthopedic diseases. It has established a single research facility for internists and orthopedic surgeons to team together on specific research problems. One of the integrated projects will be radio-isotope studies to determine the circulation of various substances to and from the joints in health and disease. Establishment of the facility was made possible by the completion of a $150,000 interior construction job supported by a matching grant from the health research facilities program of the Public Health Service. The facilities will be operated by the section of rheumatic diseases of the department of medicine, headed by Dr. GERALD P. RODNAN, and the department of orthopedic surgery, headed by Dr. ALBERT B. FERGUSON.

South Dakota

Dr. L. C. SMITH, associate professor of biochemistry has been granted a one year leave of absence to accept an appointment as visiting lecturer in the department of chemistry at the University of Glasgow, Scotland. He will take over the assignment October 1.

Stanford

Two new appointments to the faculty and the formation of two new departments in the medical school, anesthesia and dermatology, were announced recently by dean ROBERT H. ALWAY. The new appointments are Dr. DAVID GLICK, professor of pathology, and Dr. VERNON THOMAS, associate professor of anesthesia. Dr. Glick is currently professor of physiological chemistry and director of the histochemistry laboratory at the University of Minnesota. Dr. Thomas is a former professor and chairman of the division of anesthesia at the University of Rochester.

The new departments of anesthesia and dermatology were divisions of the departments of surgery and medicine respectively.

Dr. FRANK MORRELL has been appointed professor of medicine and head of the division of neurology. He succeeds the late Henry Wise Newman as division head. Dr. Morrell comes to Stanford from the University of Minnesota where he was associate professor of neurology and neurophysiology.

Vanderbilt

Dr. HERBERT C. FRANCIS, 56, head of the department of radiology, died June 1. Dr. Francis, a consultant to the Oak Ridge Institute of Nuclear Studies, had been connected with Vanderbilt since 1937. He had been professor of radiology since 1947 and head of the department since 1955.

Medical College of Virginia

Three new department heads have been appointed at the college. Dr. RICHARD G. LESTER, former associate professor of radiology at the University of Minnesota Medical School, was named professor and chairman of the radiology department. Dr. GERARD B. ODELL was named professor and chairman of the department of pediatrics. Dr. Odell was

formerly at the Johns Hopkins University Medical School were he was assistant professor of pediatrics. Dr. SOLOMON PAPPER has been named professor and chairman of the department of community medicine. Dr. Papper is a member of the department of medicine faculty and will continue to have a joint appointment in that department.

U. of Washington

A federal grant of $1,539,014 has been awarded to the university for construction and operation of a primate research center. Construction will begin early in 1962. The grant was made by the National Heart Institute from funds especially appropriated by Congress for such centers.

Wisconsin

When Dr. FREDERICK D. GEIST retired in June he completed the longest period of service of any faculty member in the department of anatomy since the Medical School was established in 1907. Dr. Geist, now 65, came to the University of Wisconsin from Boston 41 years ago. About eight years ago he helped promote changes in anatomy teaching which required first-year medical students to take clinical, as well as the basic theoretical sessions in neuro-anatomy. His special academic interests have been in neurology and in the application of basic anatomical sciences.

Wisconsin, like the University of Washington, received a grant for operation and construction of a research center using monkeys and apes for study. Construction of a four-story building, to be erected on the Madison campus, will get under way in 1962. The National Heart Institute allocated $1,664,540 for this purpose.

Yale

Stimulated by the idea of the Smith Kline and French Foreign Fellowships which are administered by the Association of American Medical Colleges, the Student Council of the Yale School of Medicine voted to appropriate $500.00 from its treasury toward the expenses of a well-qualified third-year medical student wishing to gain medical experience in an underdeveloped area. The fellowship for 1961 was awarded to GLENN L. KELLY. Kelly will spend the summer working at Central Hospital in Ebolowa, French Cameroon, Africa.

from the National Institutes of Health

NIH Negotiates New Research Projects in Asia, Middle East

Representatives of the Office of International Research Activities, NIH, returned in May from a 5-week trip through Asia and the Middle East where they conducted preliminary negotiations with officials of research institutions in Indonesia, Pakistan, India, and Egypt on proposed research projects.

Among the NIH negotiators were Dr. Martin M. Cummings, chief of the Office of International Research Activities; Robert H. Grant, assistant chief; and Francis L. Mills, head of the Foreign Currency and Program Services Branch.

Totaling an even dozen, the projects range from studies of cancer, filariasis, and cholera to investigations of new and unusual mycoses. They include the epidemiology of malnutrition, the effect of diet on infectious diseases, and the pharmacological properties of certain plants.

Support for the proposed research, amounting to some $2.7 million, would be extended in the form of U.S.-owned foreign currencies purchased by NIH in accordance with the provisions of the Agricultural Trade Development and Assistance Act of 1954 (P.L. 480). The P.L. 480 funds result from overseas sales of U.S. Agricultural surpluses.

Otolaryngologists Agree Research Training Should Develop "Critical Thinkers"

Possible means of improving research training in otolaryngology were discussed by 97 scientists who attended a conference at NIH in April. Sponsored by the National Institute of Neurological Diseases and Blindness, the conference brought together participants interested in postgraduate training from medical schools throughout the country.

Initial presentations by Dr. Richard Masland, director of NINDB, Dr. John Bordley, National Advisory Neurological Diseases and Blindness Council member, and Dr. Theodore Walsh, chairman of the NINDB Communicative Disorder Research Training Committee, provided a nucleus for general discussion. Various aspects of current research training were summarized by six training program directors: Dr. Francis A. Sooy, chairman of the department of otorhinolaryngology, University of California School of Medicine (San Francisco); Dr. Rufus D. Morrow, professor and chairman of the department of otolaryngology, University of Vermont College of Medicine (Burlington); Dr. Wesley E. Compere, Jr., associate professor of surgery, University of Southern California School of Medicine (Los Angeles); Dr. John F. Daly, professor and chairman of the department of otolaryngology, New York University-Bellevue Medical Center (New York); Dr. Dean M. Lierle, professor and chairman of the department of otolaryngology, State University of Iowa College of Medicine (Iowa City); and Dr. John R. Lindsay, professor of otolaryngology, department of surgery, University of Chicago School of Medicine.

NOTE: Readers desiring copies of publications mentioned in this section of *J. Med. Educ.*, may, unless otherwise noted, obtain them as well as additional information on any subject reported herein, by addressing their requests to the Office of Research Information, Room 115, Bldg. T-19, National Institutes of Health, Bethesda 14, Md.

Family Spending Patterns and Health Care

By H. Ashley Weeks. The first study to show *why*—in terms of social values and attitudes—families place the priorities they do on goods and services purchased for health care; what motivates some families to keep strict budgets, and others to buy on impulse while a third group follows divided spending patterns. Five-hundred middle-income, native-born, white, Protestant families were chosen for this survey on the assumption that in terms of living standards this group embodies the generally accepted American norm. Health Information Foundation. $3.50

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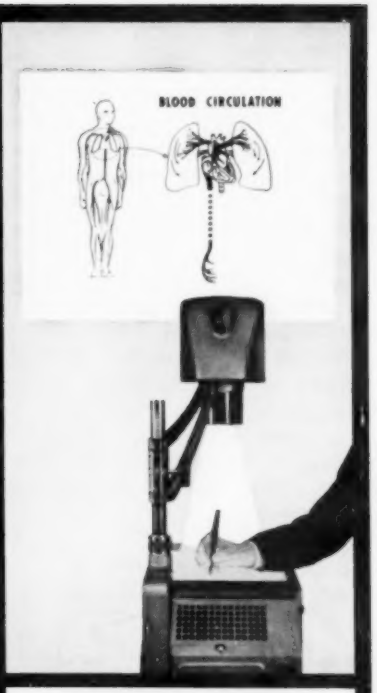

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The program brought present and potential program directors up to date regarding NINDB policies and types of support available and also provided forum for the exchange of ideas pertaining to research training of otolaryngologists, particularly as applied to the residency period.

In general, participants agreed that: research training must begin early in the residency period, preferably in the first year; one of the major aims of a research-oriented training program is to develop "critical thinkers"; and that, in many instances, research training must go beyond the residency stage in the form of concentrated technical experience.

U.S. Cardiologists Visit Russia on Exchange Mission

Dr. James Watt, director of the National Heart Institute, with a delegation of American cardiologists and surgeons, has returned from two weeks in Russia as part of a U.S.-U.S.S.R. scientific exchange program.

The scientific exchange program is based on an agreement between the U.S.S.R. and the United States for a series of reciprocal missions.

In addition to Dr. Watt, the delegation included Drs. E. Cowles Andrus and Alfred Blalock of Johns Hopkins University School of Medicine; Irvine H. Page, director of the Cleveland Clinic Foundation; Paul Dudley White, consultant in medicine to Massachusetts General Hospital; John Turnoer of Massachusetts General Hospital; and Andrew G. Morrow, Chief Surgeon, National Heart Institute.

During their stay in the Soviet Union, the group visited Moscow, Leningrad, Tiflis, Sochi, and Sukhumi.

The American and Russian scientists resumed discussions of cardiovascular research problems that began a year ago when a delegation of Russian scientists, headed by Dr. Aleksandr Myasnikov of the Institute of Therapy in Moscow, visited the United States.

Measles Immunization Subject of International Conference Scheduled at NIH November 7-9

An international conference on measles immunization, under the joint sponsorship of the University of Colorado, the National Institute of Allergy and Infectious Diseases, and the Division of Biologics Standards, will be held November 7-9 at NIH.

Conference plans are under the direction of Dr. C. Henry Kempe, professor and head of the department of pediatrics, University of Colorado Medical Center. The three-day meeting will cover worldwide epidemiological aspects of the disease; properties of attenuated measles virus strains; field data on the use of live attenuated vaccines; problems of production of the vaccines and biologic control; and the future of measles immunization.

Investigators from university and pharmaceutical laboratories, some of whom have conducted field trials with experimental vaccines in this country, and representatives from other nations where measles is a problem, are expected to attend.

Three New Publications Available from NIH

A third edition of the NIH brochure, "The Dog in Medical Research," presents standards, both physical and ethical, for the care and maintenance of dogs used for experiments in medical research. Contents include sections on sources of animals, selection for special purposes, care and handling, quarters, and humane treatment. A list of guiding principles is featured, and the booklet also includes a model pound law for local jurisdictions. The section on humane treatment

and an appended list of local organizations interested in the care of laboratory animals have been added to this edition. Copies of the booklet are available upon request.

An informational folder on the psychopharmacology research grants program and other types of financial support available for training, teaching, surveys, laboratory construction and related activities has been issued by the National Institute of Mental Health's Psychopharmacology Center.

The 1961 edition of NIH's "Scientific Directory and Annual Bibliography" has just been published. It presents the broad outlines of NIH structure, names of professional staff, and lists scientific and technical papers published by NIH staff in 1960. Author and subject indexes are provided.

New Appointment for Dr. Lewis

Dr. Kathryn R. Lewis, formerly program coordinator of the Neurological Disease Research Grants Program has been appointed to a similar position in the Division of General Medical Sciences. Dr. Lewis will serve as medical research program coordinator in the Research Grants Branch of the Division, which provides grant-in-aid support for research, research training, and fellowships in the general medical and biological sciences, in public health, aging, and certain clinical areas not covered by other NIH programs. The Division also administers the Center for Aging Research, the General Clinical Research Center Program, and the Center for Research in Child Health.

New Mental Health Traineeship for Graduate Nurses

The traineeship program of the National Institute of Mental Health was recently extended to include an undergraduate traineeship for graduates of diploma schools of nursing who are interested in a career in psychiatric nursing. These traineeships are for full-time study to complete the senior year of a baccalaureate program in nursing which provides undergraduate education in all clinical areas including public health nursing. An essential criterion is that the applicant must be interested in continuing study in a graduate psychiatric-mental health nursing program upon completion of the program.

These traineeships are available in schools participating in the National Mental Health Program, and provide an annual stipend of $1,800 plus such tuition and registration fees as required by the educational institution.

Further information about the program may be obtained by writing to the Training Specialist in Psychiatric Nursing, Training Branch, National Institute of Mental Health, National Institutes of Health, Bethesda 14, Md.

Items of Current Interest

Brown to Offer Medical Education

The Brown University Corporation has approved a plan for a program of medical education at the university which will cover the four years of undergraduate training along with the equivalent of the first two years of medical school work. The six-year program is expected to get under way in the academic year starting in September 1962. According to Brown's president, Barnaby C. Keeney, the university will begin immediately to

raise the $15 million in supporting endowment required to underwrite the program.

Because of the highly individualized nature of the course, Brown expects to limit enrollment in the program to an initial group of 25 students in each class. Physical arrangements will be planned to accommodate larger enrollments as the program gains impetus. Brown will consider the possibility of offering the clinical years after its six-year program is well established, Dr. Keeney said.

Drug Firm Ups its Grant for Psychiatry

The Smith Kline and French Foundation has announced an additional grant of $10,000 for the continuance of the American Psychiatric Association's Vestermark Fellowships under which selected medical students may expand their psychiatric knowledge.

The Vestermark Fellowships, named for the late Dr. Seymour D. Vestermark for his outstanding contributions to psychiatric training, provide medical students with the opportunity for full-time work in public mental hospitals during the summer months.

Smith Kline and French are "particularly anxious" to receive applications from hospitals which have not previously participated in the program. Applications, and further information may be obtained by writing to SK&F Awards Committee at the APA Central Office, 1700 18th St., Washington 9, D.C.

"Circulation Research" to be Published Monthly

To accommodate an increasing volume of reports on basic studies in the cardiovascular field, *Circulation Research*, a scientific journal of the American Heart Association, will be issued monthly instead of bi-monthly, beginning January, 1962. According to the Association's publications committee, the change reflects the steady expansion of research which has been taking place in the cardiovascular field during recent years.

Circulation Research was established in 1953 as a 96-page publication and has since been enlarged to its present size of 256 pages per issue. The switch to monthly publication will help speed the transmission of research findings to investigators who can benefit by them, the committee emphasized.

Heart Association Awards Lifetime Research Post to North Carolina Scientist

Dr. Carl W. Gottschalk, faculty member of the University of North Carolina School of Medicine, has been awarded the lifetime post of Career Investigator by the American Heart Association. Dr. Gottschalk is the 11th medical scientist to receive this award since it was pioneered by the Association ten years ago.

A graduate of the University of Virginia Medical School, Dr. Gottschalk was a research fellow in the department of physiology at Harvard Medical School from 1948 to 1950. In 1952 he moved to the University of North Carolina School of Medicine where he became a research fellow in cardiology. He was made an instructor in medicine at UNC in 1953, an assistant professor in 1955, and an associate professor in 1959.

Animal Care Panel to Hold Annual Meeting

Boston will be the site of the 12th annual Animal Care Panel Meeting, Sept. 27-29. Attendance at the three-day meeting at the Statler Hilton Hotel is expected to draw some 800 dealers, breeders, and manufacturers as well as those in charge of laboratories across the country.

T. C. Jones, clinical associate in pathology, Harvard Medical School and pathologist, Angell Memorial Animal Hospital, is serving as program chair-

man for the meeting. Henry L. Foster, president, Charles River Breeding Laboratories is chairman of local arrangements.

Course in Postgraduate Gastroenterology

The American College of Gastroenterology announces that its annual course in postgraduate gastroenterology will be given at the Sheraton-Cleveland in Cleveland, Ohio, Oct. 26-28. The faculty for the course will be drawn from the medical schools in an around Cleveland.

For further information and enrollment, write to the American College of Gastroenterology, 33 W. 60th St., New York 23, N.Y.

VA Items

The Physician's Award of 1960 by the President's Committee on Employment of the Physically Handicapped will go to Dr. Lee D. Cady, manager of the Veterans Administration Hospital at Houston, Texas. The award, given annually to the physician contributing most to the program, will be presented to Dr. Cady at the annual banquet of the Congress of Industrial Health, American Medical Association, at Denver, Colo., Oct. 3. Dr. Cady has been manager of the Houston VA hospital since it was transferred from the Navy to the VA in April, 1949.

Dr. H. Elston Hooper has been appointed chief of psychology research for the Veterans Administration in Washington, D.C. Dr. Hooper has been chief of the central research laboratory at the Augusta, Ga., VA hospital for the VA's cooperative psychological research, chairman of the executive committee for this multi-hospital study, and coordinator of research and training in the hospital's psychology service. He also was clinical assistant professor of psychology at the Medical College of Georgia. In his new position, Hooper will coordinate the agency's research in psychology nationwide.

Kellogg Foundation Offers to Finance PAHO Building

The Executive Committee of the Pan American Health Organization has recommended the Organization's acceptance of a $3.75 million grant offered to it by the W. K. Kellogg Foundation of Battle Creek, Mich. The grant is being offered to help finance construction of PAHO's permanent headquarters building in Washington—with the provision that PAHO's Member Governments appropriate an equal amount to expand and accelerate the Organization's health program in the Americas.

The Foundation's offer and Executive Committee's recommendation must now go before PAHO's Directing Council, which will meet Oct. 3-18, for final approval.

PERSONNEL EXCHANGE

Faculty Vacancies

PREVENTIVE MEDICINE: Full-time appointment, with epidemiologic orientation desired for teaching program with opportunities for research participation and development. Some background in public health or community organization desirable. Interest in teaching should be primary. Rank and salary based on qualifications and ability. Address, Jonas N. Muller, M.D., Chairman, Department of Preventive Medicine, New York Medical College, Fifth Avenue at 106th Street, New York 29, N. Y.

PHYSIATRIST: To assume direction of department of physical medicine and rehabilitation of Mount Sinai Hospital, with teaching responsibilities at affiliated Chicago Medical School. Affiliated with Rest Haven Rehabilitation Hospital. Will also be consultant to affiliated Homes for the Aged. Challenging opportunity for a Board Qualified or Board Eligible Physiatrist interested in developing a complete program including a residency in P M & R. Apply: Director, Mount Sinai Hospital, Chicago 8, Ill.

PSYCHIATRIST: Faculty appointment in medical school for psychiatrist, preferably with experience since residency. Must be interested in clinical teaching of residents and students. Time available for own treatment of in-patients or out-patients, also for research. Laboratories available, also personal and didactic analyses and opportunities for full psychoanalytic training locally. Unique opportunity to join an active and established department with unlimited opportunities. Salary competitive. Address: V-109.

PREVENTIVE MEDICINE: Full-time appointment, at associate, or full professorial level depending upon qualifications and ability, to head up an established, ongoing department of postgraduate education with opportunities for teaching and research participation and development in the department of preventive medicine of a university medical school. Some background in preventive medicine or administrative medicine is desirable. Salary around $14,000 plus fringe benefits. Address: V-110.

OBSTETRICIAN-GYNECOLOGIST: Board eligible or Board certified obstetrician-gynecologist for full-time assistant or associate professorship in well established university department. Salary based on training and experience. Modern physical plant with research building. Adequate clinical material and opportunity to develop areas of personal interest. Send curriculum vitae. Address: V-111.

INTERNIST: To direct Pulmonary Disease Section of a large general hospital closely affiliated with medical school. Faculty appointment. Broad clinical, research, and teaching opportunities. Active Pulmonary Function Laboratory. Contact: Chief, Medical Service, V.A. Hospital, Albany, N. Y.

MEDICAL SERVICES DIRECTOR: To have full charge of all medical and surgical activities for Kern County General Hospital System, under administrative direction of Hospital Administrator; direct and coordinate medical services, supervise operation of intern and resident teaching programs. M.D. degree from approved medical school, approved internship, completion of approved residency and three years experience in practice of medicine, two years of which must have been in teaching or supervisory capacity. Certification by an American Board. California M.D. license. Salary $15,228 to $18,504 annually. Write to: C. Leon Bryson, Kern County General Hospital, 1830 Flower St., Bakersfield, Calif.

RADIOLOGIST: To assist staff radiologist in operation of X-ray department at Kern General Hospital including supervision of technical employees, assisting in resident physician training. Active department. Possession of valid license to practice medicine in California required; certification or eligibility for certification by American Board of Radiology is desirable. Salary $11,928 to $14,508. Write to: Kern County General Hospital, 1830 Flower Street, Bakersfield, Calif.

MEDICAL EDUCATION DIRECTOR: Board Certified or comparable to requirements for Board Certification to direct an approved internship and residency program. Two hundred sixty-six bed community hospital with medical school affiliation in University City. Write and include curriculum vitae: Arthur V. Crandall, Administrator, Brackenridge Hospital, Austin, Texas.

EPIDEMIOLOGIST: A newly established, full-time faculty position now available. Candidates with medical degree preferred. Background and experience in epidemiology and biostatistics required: background in infectious disease studies with overseas field experience desirable. Duties will include organizing and directing training program in epidemiology and biometrics at a World Health Training Center now under development at this medical school. Opportunities will be available for field studies at overseas base. For further information, contact George Entwisle, M.D., Chairman, Department of Preventive Medicine and Rehabilitation, University of Maryland School of Medicine, Baltimore 1, Md.

MEDICAL EDUCATION COORDINATOR: Progressive general hospital in East desires full-time M.D. to coordinate expansion of educational program for interns and residents; educational potentialities unlimited; abundant service patients; 40 Boarded specialists representing all fields; research program contemplated; cardiac catheterization under development. Address: Paul G. Wedel, Administrator, The Williamsport Hospital, 777 Rural Avenue, Williamsport, Pa.

BACTERIOLOGIST: University Hospital has a vacancy for a medically qualified bacteriologist. Appointment also carries a university teaching position. Salary $10,000-$14,000 per annum. Applicants should have hospital experience. Applications stating date of birth, qualifications, experience, present appointment, and the names of three references should be sent to the Director of Bacteriology, University Hospital, Saskatoon, Saskatchewan, Canada.

MEDICAL TECHNOLOGIST: ASCP Registered medical technologist (female) with Bachelor's degree and 2 years experience to work in curriculum of medical technology, department of pathology. Position is chiefly assisting in administration and teaching. Salary open, dependent upon qualifications. Reply: Dr. J. F. Kuzma, Director of Department of Pathology, Marquette University School of Medicine, Milwaukee 3, Wisc.

MEDICAL LIBRARIAN: University desires Medical Librarian at an initial salary of $6,500. The successful candidate will receive faculty status equivalent to that of departmental chairman in the Faculty of Medicine. Duties will include full responsibility for the administration of the Medical Library. Minimum qualifications must include the Medical Library Association Grade I certificate, or its equivalent, with some experience in library administration. Applications should be addressed to the Chief Librarian, Macdonald Memorial Library, Dalhousie University, Halifax, Nova Scotia.

BIOCHEMIST: Junior staff position open in expanding biochemistry department of mid-western medical school. Teaching and research. Opportunity for advancement. Salary competitive. Valuable fringe benefits. Address: V-112.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

PEDIATRIC CARDIOLOGIST: Age 39, qualified for examination by American Board of Pediatric Cardiology. Now full-time, desires half-time university appointment. Catheterization laboratory necessary. Address: A-474.

PHYSICIAN-PHYSIOLOGIST: M.D., Ph.D. Age 50. Extensive experience in cardiopulmonary research, clinical and laboratory; teaching and administration; numerous publications; research grants. Desires position with responsibility to develop research and teaching program. Address: A-476.

PHYSICIAN: M.D., D.P.H. Extensive experience in epidemiological research, teaching and administration in academic and health department settings. Published articles; book in preparation. Seeks senior university appointment offering opportunities in broad field of preventive medicine. Address: A-477.

INTERNIST: M.D., Ph.D. Currently Assistant Professor of Medicine with administrative and teaching responsibility for attending and house staff and medical students on large medical service. Active, well-supported, independent research program. Training includes N.I.H. and the University of Chicago. Numerous publications. Desires geographic full-time position or equivalent in medical school or affiliated hospital with facilities for expanding both clinical and laboratory aspects of research program. Address: A-478.

INTERNIST: Certified; also certified in cardiovascular disease. Experience in medical school teaching as assistant professor at student, intern, resident and practicing physician level. Desires full-time position in teaching or community hospital and/or medical school. Address: A-479.

INTERNIST-CARDIOLOGIST: Board certified. Age 35. One year training in clinical cardiology and one year in cardiovascular laboratory — Harvard and Mayo Clinic. Now university instructor in England, returning shortly to U.S. Interested in practice, teaching, director of medical education. Address: A-480.

PATHOLOGIST: Age 56. Voluntarily retiring as professor and department head, University Medical Center, July 1, 1961. Twenty years teaching experience. Thoroughly experienced in service work. Desires position as teacher combined with service work, preferably surgical pathology. Address: A-481.

PATHOLOGIST—ADMINISTRATOR: Pathologist with excellent full-time academic background in administration, medical education, research and service responsibilities. Experience includes professorship and chairman department of pathology, development of research, curriculum, teaching methods, services, and coordinated medical school activities. Extensive publications. Desires teaching position with opportunity to aid in development. Eastern location preferred. Address: A-482.

INTERNIST: Certified. Age 35. Currently on faculty of Eastern medical school. Experience in private practice and administrative medicine. Desires appointment in teaching hospital and/or medical school with opportunities for clinical research in cardiovascular disease, teaching and administrative responsibilities. Address: A-483.

PSYCHIATRIC SOCIAL WORKER: Female, M.S., personal psychoanalysis. Three years experience in delinquency problems. Current appointment in medical school involves participation in clinical and teaching program in department of psychiatry. Desires similar position or other psychiatric clinical appointment. Southern California preferred. Available July 1, 1961. Address: A-484.

INTERNIST: Age 34, single, male. Currently on faculty of British Colonial medical school. Postgraduate training in clinical medicine and research. Experience in cardiac catheterisation and haemodynamic investigations; also in life insurance medicine and some private consultative practice. Numerous publications. Desires faculty appointment or fellowship with opportunity for cardiological investigation. Address: A-485.

OBSTETRICIAN-GYNECOLOGIST: Age 35, PBK. AOA. Desires head administrative appointment in medical school or affiliated hospital, with opportunity to develop department. Ability in creative research, teaching, and operative gynecology. Institution must allow to be earned or pay a minimum of $30,000. Address: A-486.

SURGEON-THORACIC: Age 34. Currently engaged in thoracic surgery residency training which includes all phases of pulmonary resectional surgery. Wide experience in heart surgery. Desires full-time medical school appointment, balanced between teaching, research, and dog laboratory research. Address: A-487.

MICROBIOLOGIST: Ph.D. Many years experience in clinical bacteriology and mycology. Excellent background in parasitology and virology. Well qualified in many phases of public health microbiology. Medical school and A.S.C.P. teaching experience as well as administrative responsibilities. Publications. Desires challenging appointment in medical school. Address: A-488.

ANATOMIST: Ph.D. Male, age 43. Fifteen years teaching experience. Currently assistant professor teaching neuroanatomy and gross anatomy in school of medicine and dental medicine. Also experienced in histology and physiology. Trained in educational methods and testing. Desires opportunity for teaching and research in anatomy department or in a correlated pre-clinical medical program. Address: A-489.

OBSTETRICIAN-GYNECOLOGIST: M.B.B.S., India, F.R.C.S. Canada, university trained in U.S., immigrant to U.S. Desires teaching position, department of obstetrics and gynecology of a hospital with active educational program. Address: A-490.

MEDICAL PHOTOGRAPHER: A.B., age 25. Ten years experience in medical photography (including 7 years with Veterans Administration). Special training in photomicrography. Fluent knowledge of German. Desires position with medical school and/or hospital affiliated with medical school. Good references. Resumé and references on request. Address: A-491.

PHYSIOLOGIST: Ph.D., assistant professor. Long-term research program with staff of four based on continuing large N.I.H. grants. Basic and clinical aspects of endocrine physiology. Major physiology teaching responsibilities and experience. Seeks associate professorship in physiology. Address: A-493.

PHARMACOLOGIST: M.D., Punjab University, India. Age 27, married, one child. Publications, *Ind. J. Med. Sc.* and *J. Am. Pharm. Assn.* Presently research assistant, department of pharmacology, University of Agra. Desires position with U.S. medical school with opportunity for postdoctoral study. Address: A-494.

PSYCHIATRIC SOCIAL WORKER: M.A., University of Chicago School of Social Service Administration. Desires position as teacher of psychiatric social work to medical students. Twelve years experience as chief psychiatric social worker in two medical schools. Address: A-495.

BIOPHYSICIST-PHYSIOLOGIST: Ph.D., M.S., E.E., wishes faculty appointment, teaching and research. Publications, books. Areas of research interest—bioelectric studies, origins of congenital heart disease, biomedical engineering. Address: A-496.

PHYSIOLOGIST-PHARMACOLOGIST: Ph.D., faculty member of medical school. Teaching experience. Research in endocrine physiology and pharmacology of endocrine preparations. Publications and Society memberships. Desires teaching and/or research position with opportunity for independent research. Address: A-497.

MICROBIOLOGIST-IMMUNOLOGIST: Research and teaching experience in bacteriology and parasitology. Presently on medical school faculty. Desires faculty appointment appropriate for qualifications with opportunity for independent research. Would also consider a position in a medical foundation or in a City, County, or Federal Institution affiliated with a medical school. Address: A-498.

PREVENTIVE MEDICINE-PUBLIC HEALTH: Physician with M.D., Dr.P.H. degrees desires senior teaching position on medical school or public health school faculty. Numerous publications. Previous research, teaching, administrative and health department experience. Special interests are epidemiology, preventive medicine, and biostatistics. Address: A-499.

INTERNIST: M.D., M.S. in Med. Certified. Age 46. Wishes to abandon lucrative private practice of 18 years for full-time (or half-time) medical school appointment that includes teaching, OPD, and hospital practice. Extensive clinical experience and original publications in psychosomatic medicine. Capable of organizing and heading a psychosomatic division that will integrate general medicine and psychiatry. Address: A-500.

ANATOMIST: Ph.D. (Anatomy) March 1961. M.S. in Zoology and B.S. in Biology. Age 39, married, child. Presently teaching biology in midwest. Prefers return to anatomy since Ph.D. completed. Twelve years full-time teaching experience, including four in anatomy (histology, embryology, gross, comparative, and neurology). Publications. Research interests in histochemical aspects of mammalian development; program in progress. Prepared to contribute to graduate research training programs. References. Address: A-501.

PHYSIOLOGIST: Ph.D., age 39. Desires faculty appointment, teaching and research. At present associate professor of physiology in medical school. Teaching experience and research in respiratory physiology and neuropharmacology. Salary open. Address: A-502.

PHYSIOLOGIST: Ph.D., age 41. Also E.E. degree in electronics. Wide experience in cardiopulmonary and cardiac electrophysiology as well as medical instrument design. Member of American Physiological Society and Institute of Radio Engineers, etc. Assistant professor of physiology. Seeks faculty position in medical school or in a cardiopulmonary laboratory associated with teaching and research. Address A-503.

PREVENTIVE MEDICINE: M.D., certified in internal medicine and in a subspecialty, desires position in university department of occupational medicine or preventive medicine. Trained at Mayo Clinic and in university. Experience includes clinical investigation, medical school faculty and private practice. Address: A-504.

PATHOLOGIST: Age 39; Certified (FCAP 1961). Also three years internal medicine. Experienced director of hospital laboratory and director, school of medical technology. Experienced in new laboratory designing. Extensive work in all fields of medical education, recruiting, all medical specialties, research personnel. Interested in cancer research etiology, early diagnosis, genetics, especially leukemias and lymphomas. Prefer establishing laboratories and programs in organizations or institutions, new or in building process. Address: A-505.

BIOCHEMIST: Ph.D., age 50. Will resign as research director of small drug firm for teaching-research appointment. Some medical school teaching experience early in career, but can offer extensive experience to teaching, to research (lipid metabolism; nutrition), and to cooperative projects with clinical and preclinical associates. Desires research or career professorship. Prefers no administrative duties. Address: A-506.

ALLERGIST: Age 40, board certified in allergy and pediatrics. Currently teaching part-time. Seeking full-time teaching position. Address: A-507.

DEVELOPMENT CONSULTANT OR ADMINISTRATOR: Desires position as consultant or administrator for new medical school establishment, or expansion of approved school. Fund raising background capped by six years as Executive Secretary, A.M.E.F. Recently launched program for new Saint Paul Medical School. Address: A-508.

INDEX TO ADVERTISERS

Appleton-Century-Crofts, Inc.	iii	Mead Johnson & Company	4th Cover
Charles Beseler	xxix	The C. V. Mosby Company	xix
Burroughs Wellcome & Co., Inc.	xxiii	Parke, Davis & Company	v
Eaton Laboratories	xiii	W. B. Saunders Company	1st Cover-i
Elgeet Optical Co., Inc.	viii	G. D. Searle & Company	x-xi
Harvard University Press	xii-xxix	Taylor Instrument Companies	xiv
Lea & Febiger	vii	The Upjohn Company	ix
Eli Lilly and Company	xxv	The Williams & Wilkins Company	iv
McGraw-Hill Book Company, Inc.	2nd cover	Year Book Medical Publishers, Inc.	xvi

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1. The Composition of Milks, Publication 254, National Academy of Sciences and National Research Council, Revised 1953. 2. Brown, G. W.; Tuholski, J. M.; Sauer, L. W.; Minsk, L. D., and Rosenstern, I.: J. Pediat. 56:391 (Mar.) 1960. 3. Watson, E. H., and Lowrey, G. H.: Growth and Development of Children, ed. 3, Chicago, The Year Book Publishers, Inc., 1958, p. 281.

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